USING ARITHMETIC

REVISED EDITION

4

MALLORY · COOKE · LOUGHREN

Using Arithmetic—Grade 4
(Revised Edition)

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REVISED EDITION

Grade 4

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PRINTED IN THE UNITED STATES OF AMERICA

PREFACE

Underlying Philosophy of Use. The title *Using Arithmetic* conveys the idea that arithmetic is of general use in the everyday experiences of children and adults. For an individual to use number intelligently, he needs to be aware of its existence whenever it appears. This awareness implies continued growth in the knowledge (1) of number concepts, (2) of the ways numbers are related to each other, (3) of the recognition of the situations which employ number in daily life, and (4) of the ability to use numbers in the experiences requiring their need.

New Placement of Topics. The content of *Using Arithmetic* is based on a child's "readiness" for the understanding of arithmetical concepts and the social utility of these concepts. This philosophy necessitates the introduction of certain topics at lower-grade levels and the withholding of the more difficult exercises in the four fundamental operations with whole numbers, common fractions, decimals, and measures until the upper-grade levels.

Psychological Development for Understanding and Meaning. The development is psychological in that new steps are given when they are needed by the pupil and when he will be able to master them with relatively little difficulty. A first essential in the mastery of arithmetic is *understanding*. In the past this had not been fully recognized in arithmetic textbooks. *Drill* cannot be substituted for *meaning*. Both are necessary. Hence each topic is introduced through meaningful situations.

Practice and Drill Based on Relative Difficulty and Complete Mastery. The amount of practice has been determined by the relative difficulty of the number facts or concepts presented. This practice is sufficient to result in complete mastery for the average pupil. The authors recognize that there is a wide range of ability in many arithmetic classes, and that some pupils will require additional practice for complete mastery.

The Testing Program. The testing program is designed to acquaint teachers with pupils' achievement in arithmetic and to help pupils appraise their own achievement. Each unit of work (each chapter) has a series of diagnostic tests which are designed to help the teacher discover the deficiencies of each pupil.

In addition to the diagnostic tests a series of carefully graded improvement tests is given at the end of each teaching unit. The pupil is encouraged to keep a record of his own improvement as shown by his scores on these tests. A form for keeping this record is shown near the end of each book. The pupil or teacher should duplicate this form, and the pupil should keep his test record on it.

Miscellaneous short "Test Yourself" exercises are scattered throughout several of the books. A series of promotion tests is given at the end of each grade (book). These tests will help the teacher and pupils decide whether the pupil is ready for the work of the next grade.

An alternate set of tests is available in separate booklet form. In general, these alternate tests have been designed along the same lines and are of the same difficulty as the tests printed in the books.

Individual Differences Provided for Through Diagnostic and Remedial Procedures. At the end of each unit of work (each chapter) there is given a list of the new mathematical skills and concepts which should have been mastered in that unit. The list is followed by a series of short diagnostic tests from which it can be determined on which topics individual pupils need further practice. Without such diagnoses pupils frequently go over and over again arithmetical facts, processes, and concepts which they know sufficiently well except for maintenance purposes. Although practice and drill are indispensable in effective arithmetic teaching, they should be had where they are needed. Time should not be wasted on practice and drill where they are not needed.

Immediately following each set of diagnostic tests, corresponding sets of remedial practice have been given. Thus a

pupil who cannot do the diagnostic tests correctly can turn to the corresponding remedial practice and study the explanations and correct his difficulty. While some of the pupils are doing this remedial work other pupils who had no difficulty with the diagnostic tests are working on materials especially designed for them. Hence *Using Arithmetic* makes adequate provision for individual differences.

Simple Vocabulary. In order that pupils who study *Using Arithmetic* may be free to develop number experiences unhampered by vocabulary difficulties, the vocabulary has, for the most part, been kept one grade below the arithmetical level.

Maintenance Program Based on Psychological Principles of Learning and Retention. Psychological principles of learning and retention are basic to the maintenance program. Adequate practice and test materials appear at systematic intervals to make it possible for the teacher to follow the "teach-test-reteach" procedure. Each year's work begins with a systematic review of the work covered the previous year and closes with a review of the work for the year.

Logical Development of the Ability to Solve Problems. The first anticipation of a two-step problem is made in the third grade where some of the problems ask two questions. The second anticipation of a two-step problem is made near the end of the third grade where there are problems using the answer from previous problems. This is followed in the fourth grade by problems with two questions where the answer to the second depends on the answer to the first (third anticipation of a two-step problem). The fourth anticipation of a two-step problem appears next in this grade with problems that have only one question but require two answers. Near the end of the fourth grade the pupils are ready for two-step problems. Three-part problems are presented in the fifth grade as preliminary to three-step problems which appear near the end of the grade. This problem development is followed in the sixth grade by using approximate numbers, comparing numbers, using graphs and tables, and checking answers for reasonableness. In the seventh and eighth grades this development is maintained.

This book is intended for the *fourth grade.* All of the concepts and skills developed in the third-grade book have been reviewed and maintained in this book. The child is introduced to a very simple treatment of unit fractions, finding the average, and estimating answers. The specific concepts and skills developed are given in the summary on pages 292 and 293.

Socialization and Configuration of Problems. The intensive socialization of the problems which was maintained throughout the third-grade book has been continued in the fourth-grade book. Practically all the problems are taken from the actual activities of the child at work, play, school, and in the home. The problems are highly socialized through the configuration of form in which they are presented. In many places in the text all of the problems on a page or in a chapter are developed around a single theme or topic. For example, the problem material of Chapter 1 deals almost wholly with "A Soap-Box Race during Vacation." Chapter 3 is centered around "Christmas Activities." Chapter 5 deals with "Things to do in the Winter." Chapter 6 is concerned with "Animals on the Farm." The first edition of this series of arithmetic books, *Using Arithmetic,* has demonstrated that elementary-school children are quite interested in arithmetic problems when the problems tell a connected story and when the story is carried throughout a chapter.

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CONTENTS

CHAPTER 1. GETTING READY FOR NEW WORK

	PAGE
A Soap-Box Race During Vacation (Do You Add or Subtract?)	1
Watching the Signs	3
At the Park on Saturday Afternoon (Thinking Numbers)	4
Practice in Reading and Writing Numbers	5
Diagnostic Test No. 1: Reading and Writing Numbers	6
The Money We Use	7
Solving Problems	9
Checking off the Days on the Calendar	12
Diagnostic Test No. 2: Addition Facts	13
Trying out the Racers (Linear Measure)	14
Addition Review	15
Going to the Race (Problems about Distance and Money)	18
Time for the Race to Begin (Reading Time)	19
Diagnostic Test No. 3: Subtraction	20
Subtraction Review without Borrowing	21
Checking Subtraction Problems	22
Subtraction Problems	23
Meaning of Multiplication	24
Diagnostic Test No. 4: Multiplication Facts	24
Measuring with Cups, Pints, Quarts, and Gallons	26
Washing the Doll's Clothes (Multiplication Problems)	27
Meaning of Division	28
Diagnostic Test No. 5: Division Facts	28
End of the Soap-Box Race (Addition and Subtraction Problems)	29
Dividing Large Numbers	30
What You Should Have Learned in This Chapter	31
Improvement Test No. 1	32

CHAPTER 2. USING COMMON MEASURES

Fun with the Calendar (Finding Dates)	33
The Number of Days in Each Month (Using the Calendar)	34
Review Practice (Signs and Addition)	35
Figuring the June Accounts (Money Problems)	37
Review Practice (Addition and Subtraction)	38
Making a Flower Bed (Addition and Subtraction Problems)	40
Practice in Subtracting	41
Multiplication Review	42
How Many Hours in a Day (Time with a Clock)?	43
Review Practice (Addition and Division)	45
Reading, Writing, and Counting Numbers	48
Carrying in Multiplying	50
Practice in Multiplying	51
Practice in Dividing	53
The Fruit Cupboard (Liquid Measure)	54
More Practice in Division	55
Watching for Remainders	56
Division Problems	60
Watching for Remainders in Division	61
How to Check Division with a Remainder	62
What You Should Have Learned in This Chapter	62
Diagnostic Tests No. 6-8	63
Remedial Practice (Sets 6-8)	64
Improvement Test No. 2	66

CHAPTER 3. USING THE CALENDAR AND MULTIPLICATION

PAGE

Finding Christmas on the Calendar 67
A Christmas Cake (Using the Calendar) 68
Making Christmas Gifts (Multiplication Problems) . . . 69
Using Six in Multiplying . . . 71
Carrying More Than Once in Multiplying 72
Mixed Exercises in Multiplication with Carrying 74
Can You Tell How Many Rolls? 75
Multiplying by a Two-Figure Number 76
Mixed Review (Addition, Subtraction, Multiplication, Division) 78
Multiplying an Amount of Money 79
Delivering Groceries to Needy Families (Money Problems) . 80
Multiplying Numbers that End in Zeros 81
Jane Goes Christmas Shopping (Multiplying with Zero) . . 82
Using Seven in Multiplying . . 83
Carrying Twice in Multiplying with Large Numbers . . . 85
Multiplication Review 86
A Christmas Program at School (Multiplication Problems) . 87
Number Facts That Need More Study 89
How Much Do Pets Eat (Liquid Measure)? 90
Practice in Dividing 91
Watch for the Second Question . 92
Multiplying by Ten and One Hundred 94
Abbreviations 95
Practice in Dividing by Five . 96
What You Should Have Learned in This Chapter 97
Diagnostic Tests No. 9-12 . . 97
Remedial Practice (Sets 9-12) . 99
Improvement Test No. 3 . . . 101

CHAPTER 4. USING DIVISION

Shopping at the Variety Store (Dividing by Six and Seven) . 103
Dividing Large Numbers . . . 105
More Questions on How We Divide (Steps in Division) . . 106
Buying Things for New Dresses (Dividing Two-Figure Numbers) 109
The New Apartment (Multiplication and Division Problems) 110
How many Sixes in a Number? . 112
The Chinese Garden (Dividing by Six in Problems) 114
Review 116
Number Facts That Need More Study 117
Dividing the Cookies (One-Third and One-Sixth) . . . 118
Dividing Large Numbers . . . 120
Dividing When Zero Is Last Figure in Answer 121
Dividing Dollars and Cents . 123
How Many Sevens in a Number? 125
Finding the Prices of Things for a Valentine Party (Division Problems with Seven) . . . 127
Dividing Two-Figure Numbers by Seven 128
A Winter Party (Dividing by Seven) 130
Review 131
Making Lists of Things (Mixed Problems) 132
Review 134
What You Should Have Learned in This Chapter 134
Diagnostic Tests No. 13-18 . . 135
Remedial Practice (Sets 13-18) . 137
Improvement Test No. 4 . . . 139

CHAPTER 5. THINGS TO DO IN THE WINTER
(Multiplying by Eight and Nine)

A Snow Hike (Work with Mixed Problems) 141
Multiplying Large Numbers . 142
Using Zero in Dividing 143
Checking Division 144
A Snow-Jumping Contest (Measuring) 146

CHAPTER 5. THINGS TO DO IN THE WINTER (Multiplying by Eight and Nine)—*Continued*

PAGE

What Is the First Number in the Answer? 147
Rolling Snowballs (Mixed Problems) 148
Using Eight in Multiplying . . 149
Riding on Sleds (Multiplication Problems) 151
Using Zero in Multiplying . . 152
Using Eight in Two-Figure Multiplication. 153
Visiting a Farm in the Winter (Multiplication Problems) . 155
Using Nine in Multiplying . . 156
Roasting Peanuts (Multiplication and Division Problems) . 158
Checking Two-Figure Multiplication 160
Remember to Find the Second Part of the Answer (Mixed Problems) 161
Multiplication and Division Examples. 162
Throwing Rings (Two-Figure Multiplication Problems) . . 163
Reviewing and Checking Division 164
Diagnostic Tests No. 19-20 (Addition and Subtraction) . 166
More Multiplication and Division 167
Earning Money by Shoveling Snow (Mixed Problems) . . 168
What You Should Have Learned in This Chapter 169
Diagnostic Tests No. 21-25 . . 169
Remedial Practice (Sets 21-25) 171
Improvement Test No. 5 . . . 173

CHAPTER 6. ANIMALS ON THE FARM (Dividing by Eight and Nine)

Cows in the Pasture (Multiplication and Division Problems) 175
Counting Horses and Cows (Estimating Answers) . . . 176
Do You Remember Your Division Facts? 177
More Mixed Practice. 179
Finding the Average (Division Problems) 180
Checking Division and Multiplication Examples 181
Estimating Answers 184
How Many Eights in a Number? 185
Pigs in a Pen (Division Problems) 187
How Many Nines in a Number? 188
Using Nine in Dividing 189
Chickens on the Farm (Division Problems) 191
Review Practice (Addition, Subtraction, and Multiplication) 192
Obeying the Signs 193
Solving Two-Step Problems . . 194
Review in Addition, Subtraction, and Multiplication..... 196
The Gold-Fish Farm (Mixed Problems) 198
Review. 200
Review of Number Facts That Need More Study 201
Uncle Henry's Calves (Mixed Problems) 202
What You Should Have Learned in This Chapter 204
Diagnostic Tests No. 26-31 . . 205
Remedial Practice (Sets 26-31) . 207
Improvement Test No. 6 . . . 209

CHAPTER 7. MORE ABOUT FRACTIONS

Using Fractions 211
More Roman Numerals . . . 215
A Whole and a Fraction . . . 217
Decorating the Blackboard (Using Fractions) 218
The Pet Shop (More Problems with Fractions) 219
Cutting Out Patterns (Rectangle, Square, Triangle, and Circle) 220
Finding the Perimeter 222
Equal Fractions 224
Using Four in Multiplying and Dividing 225

CHAPTER 7. MORE ABOUT FRACTIONS—*Continued*

PAGE

Using Five in Multiplying and Dividing 227
Multiplication and Division Problems 228
Using Six in Multiplying and Dividing 230
Practice with Problems . . . 232
Practice in Subtracting, Multiplying, Dividing, and Adding 233
What You Should Have Learned in This Chapter 234
Diagnostic Tests No. 32-37 . . 235
Remedial Practice (Sets 32-37) . 237
Improvement Test No. 7 . . . 240

CHAPTER 8. USING NEW MEASURES AND REVIEWING

The Temperature (Reading a Thermometer) 241
Liquid Measure 242
Dry Measure 243
Clock Time 245
Calendar Time 246
Measures of Weight 247
Abbreviations for Measures of Weight 248
Linear Measure 249
Abbreviations for Linear Measure 250
Review Problems (Problems with Measures) 251
Buying and Selling Vegetables (More Practice in Multiplying and Dividing) 253
Using Seven in Multiplying and Dividing 255
Giving a Show (Using Seven in Problems) 256
Using Eight in Multiplying and Dividing 257
More Review Problems . . . 259
Using Nine in Multiplying and Dividing 260
Practice in Multiplying and Dividing 261
A Sail-Boat Race (Using 9 in Problems) 262
Do You Remember Your Addition and Subtraction Facts? 264
Problems That Have Two Steps 265
What You Should Have Learned in This Chapter 266
Diagnostic Tests No. 38-41 . . 267
Remedial Practice (Sets 38-41) . 269
Improvement Test No. 8 . . . 271

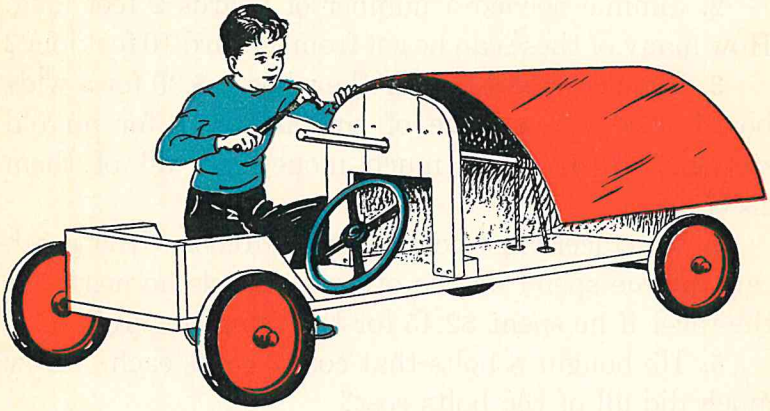
CHAPTER 9. ARE YOU READY FOR THE FIFTH GRADE?

The Family Garden (Multiplication Problems) 273
Practice in Multiplying . . . 274
Uncle Henry's Garden (Multiplying by Six and Seven) . . 276
Practice in Dividing by Six and Seven 278
Delivering Milk (Can You Carry in Multiplying?) . . . 279
More Practice in Dividing by Six and Seven 280
Problems with Two or More Parts to the Answer 281
Practice in Multiplying with Eight and Nine 282
Grandfather's Vegetable Garden (Mixed Problems) 283
Selling Vegetables at the Market (Mixed Problems) 284
Mixed Practice 285
More Practice in Dividing with Eight and Nine 286
Measuring Things 288
Parts of Things (Fractions) . . 289
Practice with Fractions . . . 290
Addition and Subtraction Review 291
Are You Ready for the Fifth Grade? 292
Can You Climb the Ladder (Promotion Tests)? 293
Promotion Tests No. 1-7, Addition, Mixed Problems, Subtraction, Measures, Multiplication, Division, and Fractions 294
Addition, Subtraction, Multiplication, and Division Facts 300
Record on Improvement Tests . 305
Answer Sheet 306
The Members of the Hard-Workers' Group 307
Tables of Measures 308

CHAPTER 1

GETTING READY FOR NEW WORK

A Soap-Box Race During Vacation



Every summer some of the boys whom Jimmie knows build soap-box racers and enter the soap-box race. Jimmie decided to build a racer. He found that the rules of the race told him how heavy the soap-box racer may be. They showed him how long it could be made and the kind of materials that he could use. The rules told him things that he must know before he could make a racer that could be used in the race.

Jimmie also found that he had to measure the parts very carefully if they were to fit together well.

In building the racer Jimmie found that he had to add, subtract, multiply, and divide. He knew how to do all of these things.

These are some of the problems that he had to do. Study each one and tell whether he had to add, subtract, multiply, or divide. Then do these problems:

1. The racer and its driver must not weigh more than 250 pounds. If Jimmie weighs 82 pounds, what is the most that his racer can weigh?

2. Jimmie needed a number of boards 2 feet long. How many of these can he get from a board 10 feet long?

3. Jimmie paid $1.00 for the wheels, $.30 for a wide board, $.60 for a piece of tin, and $.55 for an old steering wheel. How much money did all of them cost?

4. The racer must not cost over $10.00. How much can Jimmie spend on the other materials he needs for the racer if he spent $2.45 for the things in Prob. 3?

5. He bought 8 bolts that cost 3 cents each. How much did all of the bolts cost?

6. Jimmie needs 2 pounds of nails for the racer. If they cost 5¢ a pound, how much will he pay for the nails?

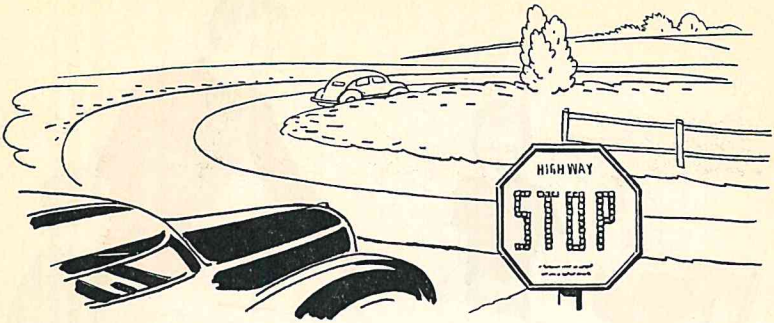
7. The racer must not be over 30 inches high. The axle is 5 inches from the ground. How high can the body of the racer be?

8. The racer can be 42 inches longer than it is high. How long can it be? (See Prob. 7.)

9. Jimmie is now 10 years of age. Boys from 9 through 15 years of age may enter the race. How many more races may Jimmie enter after this year?

10. Robert is now 11 years old. How many more races may he enter after this year? (See Prob. 9)

Watching the Signs



All of your life you will see signs. They will be of many kinds. Signs are made to tell something. The highway sign above tells you that you must stop. This sign would be of no use to you if you could not read it.

Signs are used in arithmetic. You need to know how to read them.

$+$ This sign means **add.** It is read **plus** or **and.**

$-$ This sign means **subtract.** It is read **minus** or **take away.**

$\times$ This sign means **multiply.** It is read **times.**

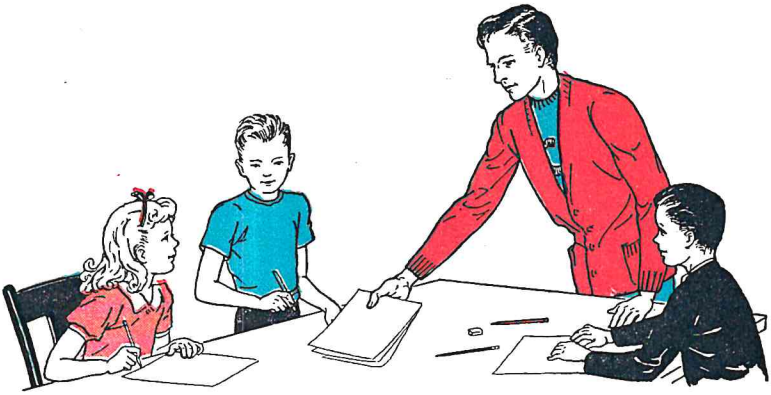
$\div$ This sign means **divide.** It is read **divided by.**

$=$ This sign means the **same as** or **equal to.** It is read **equals.**

Read these examples and give the answers orally:

1.	$6 + 7 =$	$3 \times 7 =$	$? + 7 = 15$	$9 + 8 =$
2.	$8 - 3 =$	$12 - 7 =$	$10 - ? = 6$	$17 - 8 =$
3.	$5 \times 3 =$	$15 \div 3 =$	$6 + ? = 15$	$27 \div 3 =$
4.	$12 \div 3 =$	$16 \div 8 =$	$4 \times ? = 20$	$8 \times 3 =$

Vacation Fun



At the playground in the park some children get out a newspaper each week. They tell about their games and their fun. Mr. Brown, the teacher, helps them. Here is one of their news stories.

At the Park on Saturday Afternoon

Many persons spent Saturday afternoon in the park. They had a good time. There were many things to do.

There were two dozen swings. All of them were in use.

The boy who had charge of the rowboats rented twenty of them. Two people rode in each boat.

The man at the stand sold 500 ice-cream cones and 300 bottles of soft drinks.

The boys ran five races. Ten boys ran in each race. No boy ran in more than one race.

At one time there were eighteen children sailing their small boats on the pond.

At the band concert there were one thousand people

sitting in the grandstand. Some people had to sit in their cars. There was no room in the stand.

Answer these questions:

1. How many swings were there in the park?

2. How many ice-cream cones did the man at the stand sell?

3. How many people rode in the rowboats?

4. How many boys ran in the races?

5. How many people sat in the grandstand?

Practice in Reading and Writing Numbers

One thousand	1,000	Three thousands	3,000
One	1	Four hundreds	400
Answer A	1,001	Two tens	20
		Five ones	5
		Answer B	3,425

When we write thousands, we count three figures from the right and place a comma.

Answer A is read "one thousand, one."

Answer B is read "three thousand, four hundred twenty-five."

These numbers are read:

4,632	four thousand, six hundred thirty-two.
8,493	eight thousand, four hundred ninety-three.
6,008	six thousand, eight.
4,530	four thousand, five hundred thirty.
1,016	one thousand, sixteen.
9,000	nine thousand.

Diagnostic Test No. 1: Reading and Writing Numbers

This test and the others in this chapter are like those that you took in the third grade. You should make good scores on them. If you do not, you will have to study all of the review in this chapter so that you can do the problems of the fourth grade.

Read these numbers:

1. 79 206 981 1,394 8,976

First read these numbers and then write them in words:

2. 27 384 4,872 7,348 76 2,835

3. 13 270 1,840 5,116 230 3,000

Write in figures:

4. Thirty-three.
5. Eighty-two.
6. Seventeen.
7. Seventy.
8. Three hundred eighty-four.
9. Five hundred sixty-three.
10. Seven hundred three.
11. Eight hundred ninety.
12. Six thousand, four hundred twenty-five.
13. Eight thousand, one hundred sixty.
14. One thousand, five hundred three.
15. Nine thousand, two hundred sixty-seven.
16. Five thousand.

How many thousands, hundreds, tens, and ones are there in each of these numbers?

17. 1,715
18. 2,741
19. 3,619
20. 5,406
21. 1,245
22. 3,862
23. 5,417
24. 8,002
25. 2,387
26. 2,792
27. 6,290
28. 4,386
29. 4,125
30. 3,864
31. 9,406
32. 7,028

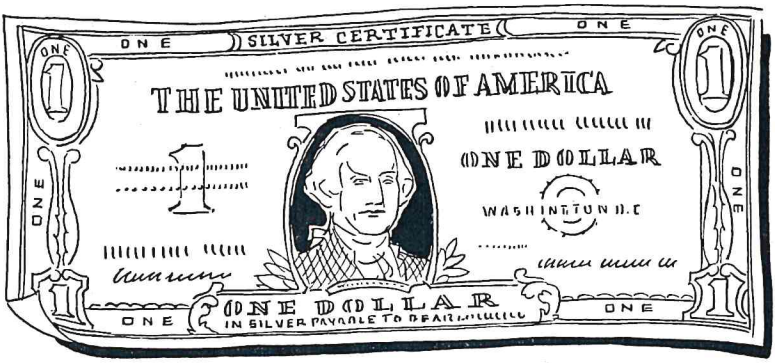
The Money We Use

The coins that we use every day are shown in the picture above. Name each one of them. Tell how many cents each coin is worth.

Read each of these statements. Tell what word or number belongs in each blank.

1. A penny is — cent. It is made of copper.
2. A nickel is — cents. It is made of nickel.
3. A dime is — cents. It is made of silver.
4. A quarter is — cents. It is made of silver.
5. A half dollar is — cents. It is made of silver.
6. A silver dollar is — cents. It is made of silver.
7. A paper dollar is — cents. It is made of paper.
8. There are — cents in a silver dollar and — cents in a paper dollar.
9. A nickel is worth four cents more than a —.
10. A quarter is worth — cents more than a dime.
11. A dollar is worth — cents more than a quarter.
12. Two dimes and one nickel make — cents.
13. Jim has 6 nickels. Walter has 3 dimes. Do they have the same amount of money? How much money does each have?
14. A dime is worth — cents more than a penny.

More about Money



This sign ¢ means **cent** or **cents.** You will find it on price cards of small articles in stores.

This sign $ means **dollar** or **dollars.** It is read dollars. You will use it many times in arithmetic.

We read $3.45 like this: three *dollars* and forty-five *cents.* The period, or point, is the **cents' point.** It is always read *and* when there are both dollars and cents.

We write three dollars this way: $3.

We write five cents this way: $.05 or 5¢.

Remember that 115¢ is written $1.15.

Write in figures. Use the dollar sign and cents' point.

1. Twenty dollars **2.** Ninety-four cents

3. Six dollars and ten cents

4. Thirty-eight dollars and twenty cents

5. Seven cents

6. One hundred fifty dollars

7. Three hundred thirty-one dollars and fifty-four cents

Practice with Numbers

Read these numbers:

1.	4,807	1,248	2,759	3,425	4,934
2.	5,166	6,512	7,075	8,690	9,381
3.	2,000	3,753	4,007	7,600	6,188

Count from:

4.	1,109 to 1,129	9,351 to 9,362	6,642 to 6,655
5.	2,900 to 2,911	4,798 to 4,812	7,001 to 7,010

What numbers should be in the blanks?

6. 385 is — hundreds, — tens, and — ones.

7. 4,727 is — thousands, — hundreds, — tens, and — ones.

8. 2,304 is — thousands, — hundreds, — tens, and — ones.

9. 1,086 is — thousands, — hundreds, — tens, and — ones.

Solving Problems

Perhaps you have never used the word *solving*. You will use it often in arithmetic. You will need to learn its meaning and to remember it. To solve a problem means to think about it and to answer its questions.

To solve a problem you must:

1. *Read the problem carefully* to learn exactly what it says.

2. *Find the questions that are asked.* Study the things that the problem tells you and the questions that it asks.

3. *Decide what to do.* Decide whether to add, subtract, multiply, or divide.

4. *Do what you decided to do in statement 3.*

Examples of Problem Solving

The Problem: Jimmie finished his racer 4 days before the race. If he practiced for 3 hours on each of these 4 days, how many hours did he practice before the race?

Solving the problem:

1. *Read the problem carefully.* It tells you that he practiced 3 hours each day for 4 days.

2. *Find the question that is asked.* It asks, "How many hours did he practice before the race?"

3. *Decide what to do.* To find the answer we must multiply.

4. We multiply to find the number of hours he practiced in all.

If:	He practiced 3 hours each day
Then:	In 4 days he practiced *4* 3's
	$4 \times 3 = 12$
Jimmie practiced 12 hours.	

The Problem: Robert bought a ball that cost \$.35 and a glove that cost \$.50. How much did he pay for both?

Solving the problem:

1. *Read the problem carefully.* It tells you that the ball cost \$.35, and the glove cost \$.50.

2. *Find the question that is asked.* It asks, "How much did he pay for both?"

3. *Decide what to do.* It is easy to see that to find

the cost of both you must add the cost of the ball and the cost of the glove.

4. Write the amounts and add them. Then the problem is solved.

If:	Ball cost \$.35	
	Glove cost \$.50	\$.35
Then:	Both cost \$.35+\$.50	.50
	Cost of both is \$.85	\$.85

The Problem: Robert had \$.96 before he bought a ball and a glove. If he paid \$.85 for them, how much did he have left?

Solving the problem:

1. *Read the problem carefully.* It tells you that he had \$.96 and that he spent \$.85.

2. *Find the question that is asked.* It asks, "How much did he have left?"

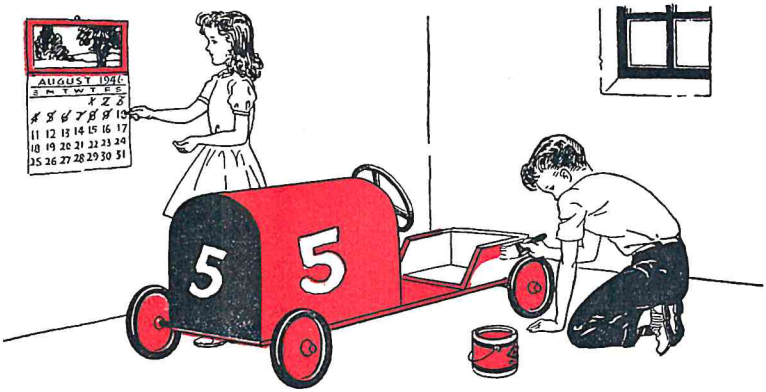
3. *Decide what to do.* To find how much is left we always subtract.

4. Write the larger number above the smaller one. Then subtract and the problem is solved.

If:	He had \$.96	
	He spent \$.85	\$.96
Then:	He had left \$.96 − \$.85	.85
	\$.96 − \$.85 = \$.11	\$.11
	He had \$.11 left	

Robert had \$.11 left after he had spent \$.85 from his \$.96.

Checking Off the Days on the Calendar



1. How many days has Jane checked off?

2. The soap-box race is to be held on the third Wednesday in August. On what day of the month is that?

3. How many days is it from the day that Jane is checking off in the picture until the race is held? Do not count the day of the race.

4. How many days are there in a week?

5. How many days more than a week are there until the race? (See Prob. 3.)

6. How many days are there in August?

7. Last year the soap-box race was held on August 27. This year the race is to be held how many days earlier or later than last year? (See Prob. 2.)

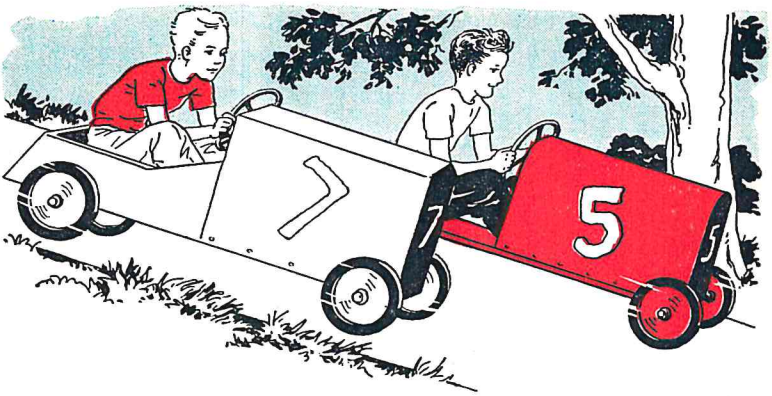
8. Jimmie started building his racer on the third of August. He is finishing it today which is August tenth. How many days has it been since he started to build it? Count August third and tenth.

DIAGNOSTIC TEST NO. 2: ADDITION FACTS **300-301**

Use an answer sheet. See page 306. If you make any mistakes, study the facts given on pages 300-301.

1.	8	2	3	1	6	4	9	5	0	7
	4	1	6	0	5	1	3	8	5	6
2.	7	4	6	7	5	0	4	2	9	1
	0	4	6	1	9	6	8	5	8	5
3.	2	3	9	4	2	7	1	6	8	0
	8	7	4	6	0	7	4	9	2	8
4.	1	3	6	4	2	3	0	5	8	6
	1	3	0	7	6	2	1	7	6	2
5.	9	3	8	7	1	5	7	2	4	3
	5	8	9	2	6	3	8	4	9	0
6.	6	5	8	6	9	8	0	7	2	9
	4	6	0	1	6	3	4	4	9	9
7.	0	3	5	1	9	4	6	0	8	1
	9	4	2	3	7	2	8	7	7	9
8.	7	3	1	4	6	2	4	3	9	5
	5	9	7	5	3	2	0	5	1	4
9.	2	0	5	0	6	4	8	7	9	8
	7	2	1	3	7	3	1	3	0	5
10.	9	5	3	2	7	1	5	0	8	1
	2	0	1	3	9	8	5	0	8	2

Trying out the Racers



Jimmie and Frank tried out their soap-box racers. They started together at the top of a hill. Jimmie got to the bottom first, but Frank went farther than Jimmie did. They decided to measure and see how much farther Frank's racer had gone.

Jimmie had a foot rule with his tools, but Frank went to the house and got a yardstick.

"The difference is 9 feet," said Jimmie.

"I get 3 yards," answered Frank.

"That is just the same," said Jimmie. "There are 3 feet in one yard. So there are 3×3 feet, or 9 feet in 3 yards."

12 inches	=	**1 foot**
3 feet	=	**1 yard**

1. Name three objects that you would measure with a foot rule.

2. Name three things that you would measure with a yardstick.

3. How many inches are there in 3 feet?

4. How many inches are there in 1 yard?

5. There are — inches in 3 feet. There are 36 inches in — yard. There are the same number of inches in a yard as there are in — feet.

6. A yard is — times as long as one foot.

Addition Review

Add:

1.	4	9	12	19	38	43	82
	5	7	6	5	7	36	85

2.	76	384	733	856	689	207
	97	215	852	615	738	360

3.	1	84		26	40	
	6	27	684	8	43	30
	9	53	173	79	10	104
	8	62	349	10	57	98

4.	$15.30	$.57	$7.50	$57.80	$32.67
	4.37	.39	1.33	62.30	56.45

Add down. Check by adding up.

5.	6.	7.	8.	9.	10.	11.
4	3	9	7	22	84	45
8	7	2	8	97	26	83
9	5	6	4	36	75	26

Adding by Endings

A	B	C
17 5 22	17 + 5 = 22	36 + 6 = 42

Look at examples A and B. Think 7 + 5 = 12. You know that the answer will end in 2. The sum of 17 + 5 will be the next number larger than 17 that ends in 2. It is, of course, 22. Remember that this is called **adding by endings.**

What is the sum of 27 and 5? What is 37 + 5? What is 47 + 5? What is 57 + 5? What is 67 + 5? What is 77 + 5?

In Ex. C the sum of 6 and 6 ends in 2. The next number larger than 36 that ends in 2 is 42.

What is the sum of 16 and 6? What is 26 + 6? What is 46 + 6? What is 56 + 6? What is 66 + 6?

Give the answers orally, first reading across the rows and then down the columns:

1. 21 + 9 =	65 + 5 =	18 + 7 =	38 + 3 =
2. 34 + 7 =	27 + 8 =	17 + 6 =	19 + 2 =
3. 46 + 6 =	63 + 7 =	36 + 9 =	25 + 9 =
4. 28 + 2 =	28 + 5 =	43 + 4 =	95 + 6 =
5. 42 + 9 =	44 + 9 =	58 + 6 =	68 + 8 =
6. 15 + 8 =	19 + 5 =	17 + 9 =	28 + 9 =
7. 37 + 7 =	47 + 3 =	76 + 4 =	27 + 2 =
8. 28 + 4 =	34 + 8 =	33 + 8 =	82 + 5 =
9. 19 + 6 =	18 + 9 =	69 + 8 =	16 + 7 =

10.	35 + 7 =	16 + 8 =	51 + 3 =	24 + 9 =
11.	46 + 5 =	49 + 7 =	36 + 5 =	32 + 8 =
12.	29 + 3 =	54 + 5 =	85 + 3 =	16 + 2 =
13.	40 + 3 =	30 + 3 =	20 + 3 =	10 + 3 =

14. The answers to Ex. 13 are 43, —, 23, —. Each of these answers is—more than the next answer. Why?

Add down. Check by adding up.

15.

3	3	6	7	8	9	9	4	2	3
8	5	9	3	4	6	3	5	6	5
8	6	7	3	6	9	7	8	9	4

16.

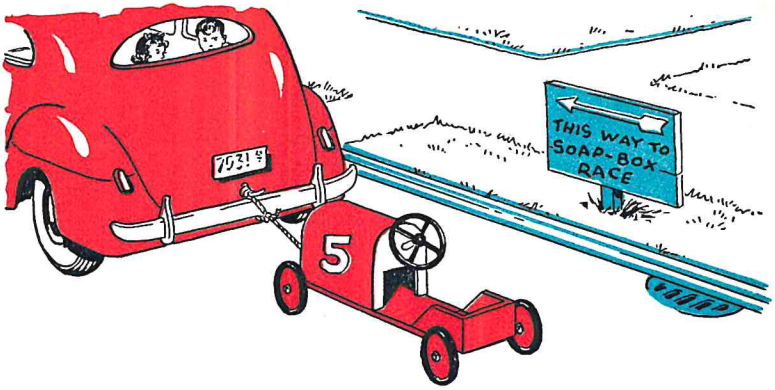
77	45	56	63	46	37	53
98	57	64	99	95	86	78
36	48	79	84	97	66	28
56	47	79	75	48	35	74

17.

77	78	94				
96	57	57	478	561	448	457
39	45	73	237	697	515	898
43	93	59	885	247	392	535

18.	15 + 9 =	67 + 8 =	66 + 7 =	76 + 6 =
19.	37 + 5 =	56 + 7 =	65 + 6 =	75 + 7 =
20.	49 + 9 =	47 + 8 =	57 + 9 =	64 + 9 =
21.	86 + 7 =	57 + 7 =	27 + 6 =	68 + 7 =
22.	73 + 6 =	93 + 7 =	79 + 7 =	76 + 8 =
23.	46 + 9 =	74 + 9 =	63 + 8 =	56 + 7 =
24.	17 + 8 =	44 + 7 =	22 + 8 =	64 + 6 =
25.	32 + 9 =	43 + 9 =	27 + 4 =	89 + 4 =
26.	28 + 9 =	37 + 7 =	49 + 8 =	61 + 9 =

Going to the Race



On the day of the race Father took Jane and Jimmie and the racer to the race in his car.

1. It is 3 miles from their home to the race track. How many miles is it to the race track and back home again?

2. Father had to drive very slowly with Jimmie's racer tied to the back of his car. He drove only 6 miles per hour all the way. Did he take a whole hour or only part of an hour to drive the 3 miles to the race track not counting the stops he made?

3. On the way to the soap-box race Father stopped to get gasoline and oil for his car. He spent $2.60 for gasoline, $.76 for oil, and $.50 for tire repairs. How much did he spend for all three?

4. Jane ran to a variety store near by and spent $.10 for a bracelet, $.25 for an American flag, and $.15 for lead pencils. How much did she spend?

5. Jimmie made a list of the money that Father spent.

Here is his list:

Dinner for three	$1.65
Gasoline	2.60
Oil	.76
Repairs to tire	.50

How much money did Father spend?

Time for the Race to Begin

1. Every boy who enters the race must report to the race officials. They will inspect his racer at the time shown by the clock in Fig. 1. At what time must the boys report?

1 2 3

2. Each boy must be weighed at 3 o'clock. Draw the face of a clock to show 3 o'clock.

3. Each boy must take his racer to one of the officials to have it weighed at the time shown by the clock in Fig. 2. When will the cars be weighed?

4. All cars must be lined up on the starting line when the hands of the clock look as they do in Fig. 3. When must the cars be lined up?

5. The race will begin 5 minutes after the cars are lined up. At what time will it begin?

6. The race was over at 5 o'clock. Draw a clock face to show 5 o'clock.

DIAGNOSTIC TEST NO. 3: SUBTRACTION **301-302**

Use an answer sheet and subtract rapidly. If you make any mistakes, study the facts given on pages 301-302.

1.	9	12	11	9	7	11	13	8	15	3
	6	4	8	4	5	2	9	3	7	0
2.	15	9	10	1	14	6	16	12	9	2
	6	9	9	0	7	1	8	3	5	1
3.	14	13	3	7	8	6	12	7	14	5
	5	7	2	1	6	5	8	3	9	0
4.	10	6	9	18	2	9	11	8	13	2
	6	6	1	9	0	8	3	5	6	2
5.	12	5	4	10	1	8	13	10	6	7
	9	4	0	7	1	4	5	8	3	2
6.	11	9	10	17	10	5	11	13	17	4
	6	0	3	9	2	5	7	4	8	4
7.	9	5	15	11	12	10	5	8	7	9
	7	2	8	4	5	1	3	0	6	2
8.	0	8	12	5	14	11	15	7	8	4
	0	2	7	1	6	5	9	4	8	2
9.	10	11	8	9	8	7	14	4	10	3
	4	9	1	3	7	0	8	1	5	1
10.	13	7	4	6	16	6	12	6	16	3
	8	7	3	4	9	0	6	2	7	3

Subtraction Review without Borrowing

Remember that we subtract to find:

1. What is left?	2 from 9 leaves 7.
2. What is the difference?	The difference between 2 and 9 is 7.
3. What must be added?	7 must be added to 2 to make 9.

The sign of subtraction is $-$. It is called the **minus sign** and is read minus, or take away.

Copy and subtract:

1.	9	9	12	11	10	13	15	16
	6	4	4	2	6	9	7	8
2.	78	83	92	67	25	87	91	96
	53	50	10	51	10	63	80	51
3.	96	54	18	78	95	64	98	45
	93	40	14	60	21	43	37	13
4.	156	127	143	114	590	883	977	637
	66	30	51	84	500	813	747	215
5.	96	86	76	66	56	46	36	26
	20	20	20	20	20	20	20	20

6. Each answer in Ex. 5 is — more than the next answer to the right of it.

Subtraction with Borrowing

Copy and subtract. Watch the zeros.

1.	53	74	87	36	65	78	52	91	30
	16	58	29	17	46	39	14	63	12

2.	814	673	954	831	725	556	863
	435	284	569	372	467	289	574

3.	80	46	98	73	50	76	77	48	94
	70	26	93	69	35	40	57	39	64

4.	150	380	306	608	530	286	344
	50	170	142	35	165	103	243

5.	628	671	902	700	756	834	815
	593	491	678	439	200	505	738

Checking Subtraction Problems

You can be sure that your answers are right by checking your examples.

SUBTRACT		CHECK
874 352 522	To check subtraction examples: 1. Add the smaller number to the answer. 2. The sum should equal the larger number.	352 522 874

Subtract and check:

49	92	76	34	473	592	246	847
17	48	35	26	212	187	194	665

Subtraction Problems

1. Frank had $7.34 in his bank. He spent $3.56 of it to build his racer. How much did he have left in his bank?

2. Jimmie spent $5.98 on his racer. How much more did he spend than Frank? (See Prob. 1.)

3. Jimmie had a board 78 inches long. He cut a piece from it 39 inches long for Frank. How long was the piece that he had left?

4. Frank's racer is 48 inches long. Jimmie's is 51 inches long. How many inches longer is Jimmie's racer than Frank's?

5. Fifty-two boys built racers for the soap-box race, but 27 of them did not enter the race. How many boys entered the race?

6. $9 - 2 = 7$ means:

- 9 less 2 is 7
- 9 minus — is 7
- 9 is 7 more than —
- The difference between 9 and 2 is —

7. Henry earned $4.28 delivering papers during August. He bought school supplies costing $3.79. How much did he have left?

8. Last month Henry earned $4.40 delivering his papers. If he spent $.60 at the movies, how much did he have left?

9. During the summer Henry saved $19.25. He plans to spend $12.50 on going to a boy scout camp. How much will he have left when he returns from camp?

Meaning of Multiplication

1. When we say "the sum of $2 + 2 + 2 + 2 = 8$," we are adding. When we say "four 2's = 8," we are multiplying.

2. If we say "four 2's" we mean $2 + 2 + 2 + 2$. The *four* tells us how many 2's were added.

3. Explain the meaning of five 3's.

The sum of $3 + 3 + 3 + 3 + 3 =$ —. $5 \times 3 = ?$

4. Show by addition that three 1's are 3. $3 \times 1 = ?$

5. Does one 3 = 3? What does three 1's mean?

6. $1 \times 5 = ?$ $5 \times 1 = ?$ $1 \times 7 = ?$ $7 \times 1 = ?$

7. Which is quicker, to add five 7's or to multiply 7 by 5?

8. Would you say that, "multiplying is a short way to add the same number several times?"

9. What is eight 5's? What is five 8's?

Diagnostic Test No. 4: Multiplication Facts

Write the answers on an answer sheet as quickly as you can. Study any examples that you missed on pages 302-303.

1.	0	1	0	2	4	1	5	9
	3	1	5	1	1	2	1	1
2.	0	6	1	5	0	7	0	1
	2	1	9	2	8	1	9	6
3.	6	3	5	5	1	5	8	0
	2	9	4	3	3	5	2	7

4.	2	5	7	6	2	5	5	2
	3	6	2	3	5	7	8	6
5.	5	2	2	4	7	3	6	3
	9	9	2	5	3	2	5	8
6.	7	3	3	8	0	1	3	9
	5	1	3	5	4	7	7	5
7.	8	4	9	4	2	4	4	9
	3	4	2	6	8	2	7	3
8.	4	4	1	3	1	0	4	3
	3	8	4	5	5	6	9	6
9.	2	1	6	7	8	3	9	2
	7	8	4	4	4	4	4	4

Multiplying by Four and Five

Multiply. Use an answer sheet.

32	*Question:*	Four 32's are —
$\times 4$	Multiply	$4 \times 2 = 8$. Write 8 under 2 and 4.
128		$4 \times 3 = 12$. Write 12 in the answer next to 8.
	Answer:	Four 32's are 128.

1.	41	311	910	210	802	90
	5	5	4	5	4	5
2.	702	510	20	921	600	601
	4	5	4	4	5	4

Measuring with Cups, Pints, Quarts, and Gallons

We measure liquids like water, milk, and syrup by cups, pints, quarts, and gallons.

2 cups	**=**	**1 pint**
2 pints	**=**	**1 quart**
4 quarts	**=**	**1 gallon**

1. Mary Lou's little brothers, Eddie and Norman, go to nursery school. Every morning and afternoon each child in the nursery school drinks a cup of milk. How much milk does Eddie drink at the nursery school each day?

2. Tell how much milk both Eddie and Norman drink each day. (Use the answer to Prob. 1.)

3. The milkman brings 9 quart bottles of milk to the nursery school each morning. How many pints of milk does he bring?

4. How many cups of milk are there in 32 pints?

5. If the milkman has 8 gallons of milk, how many quart bottles can he fill?

6. If a water pail holds 12 quarts, how many gallons does it hold?

More Multiplying by Four and Five

Multiply. Use an answer sheet.

1.	811	41	701	71	800	312
	5	4	5	4	4	4
2.	621	610	521	901	52	401
	4	5	4	5	4	5
3.	912	81	820	700	722	910
	4	5	4	5	4	5

Washing the Doll's Clothes

1. Jane has 3 dolls. Each doll has 6 dresses. If Jane washed all the dresses, how many did she wash?

2. She washed 3 aprons for each of the 3 dolls. How many aprons did she wash?

3. Betty's small doll has 3 caps. Betty made 4 dresses to go with each cap. How many dresses does the small doll have?

4. Betty filled her doll's wash tub with water 6 times. It took two cups of water each time. How many cups of water did she use?

5. If she washed 4 doll dresses each of the 6 times the tub was filled, how many dresses did she wash?

6. She hung 8 doll dresses on each of 3 clothes lines. How many dresses were hung on the 3 lines?

7. It took Jane 9 minutes to iron each of her doll's 3 party dresses. How long did it take to iron all 3?

Meaning of Division

1. If you were asked how many 2's there are in 8, would you reply, "There are four 2's in 8, because $4 \times 2 = 8$"? When you say there are four 2's in 8, you are dividing 8 by 2.

2. Study the examples which follow. Tell the answers needed to fill the blank spaces.

$5 \times 2 = 10$	$10 \div 2 = 5$
$4 \times 3 = 12$	$12 \div 3 = —$
$3 \times 4 = —$	$12 \div 4 = —$
$1 \times 5 = 5$	$5 \div 5 = 1$

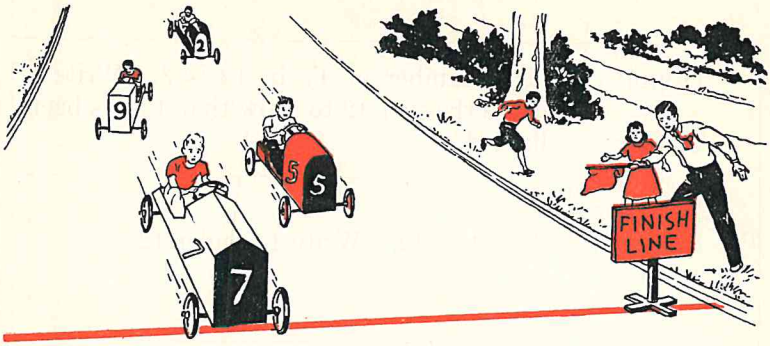
3. Find the answers: $6 \times 2 = ?$ $12 \div 6 = ?$

Diagnostic Test No. 5: Division Facts

Answer these as quickly as possible. Use an answer sheet. Study the facts you miss on page 304.

1.	$2\overline{)4}$	$3\overline{)15}$	$5\overline{)20}$	$4\overline{)12}$	$3\overline{)21}$	$5\overline{)25}$	$2\overline{)2}$
2.	$5\overline{)10}$	$8\overline{)8}$	$5\overline{)30}$	$3\overline{)27}$	$2\overline{)10}$	$5\overline{)35}$	$5\overline{)40}$
3.	$5\overline{)45}$	$2\overline{)12}$	$4\overline{)20}$	$4\overline{)4}$	$6\overline{)30}$	$6\overline{)12}$	$7\overline{)35}$
4.	$7\overline{)21}$	$8\overline{)40}$	$3\overline{)3}$	$4\overline{)8}$	$9\overline{)45}$	$2\overline{)6}$	$9\overline{)27}$
5.	$6\overline{)6}$	$3\overline{)24}$	$9\overline{)18}$	$2\overline{)16}$	$4\overline{)24}$	$5\overline{)15}$	$3\overline{)12}$
6.	$4\overline{)28}$	$2\overline{)18}$	$4\overline{)32}$	$6\overline{)18}$	$8\overline{)16}$	$4\overline{)36}$	$9\overline{)9}$
7.	$2\overline{)8}$	$5\overline{)5}$	$6\overline{)24}$	$7\overline{)28}$	$8\overline{)32}$	$7\overline{)7}$	$3\overline{)18}$
8.	$2\overline{)14}$	$3\overline{)9}$	$3\overline{)6}$	$4\overline{)16}$	$7\overline{)14}$	$8\overline{)24}$	$9\overline{)36}$

The End of the Soap-Box Race



1. Jimmie (5) and Frank (7) won places in the early races. They are shown in the picture above finishing the final race. Which racer finished first? Which finished second? Which third? Which fourth?

2. Jimmie's racer weighs 219 pounds with him in it. Since Jimmie weighs 82 pounds, how much does his racer weigh?

3. Frank weighs 80 pounds. His racer weighs 117 pounds. How much do Frank and his racer weigh?

4. Which weighs more, Jimmie and his racer or Frank and his racer? How much more? (See Prob. 2 and 3.)

5. Jimmie received a fountain pen and pencil for winning second place in the race. The pencil cost $1.59. The fountain pen cost $2.36. How much did both of them cost?

6. How much more did the fountain pen cost than the pencil? (See Prob. 5.)

Dividing Large Numbers

Question: How many 4's are there in 124?

DIVIDE 3 4)124	The number of 4's in 12 is 3. Write 3 above the 2 of 12 to show that 12 has been divided.
MULTIPLY 3 4)124 12	$3 \times 4 = 12$. Write 12 under 12.
SUBTRACT COMPARE	$12 - 12 = 0$. The difference is less than 4. There is nothing to write.
BRING DOWN 3 4)124 12↓ 4	Bring down the 4.
DIVIDE 31 4)124 12 4	$4 \div 4 = 1$. Write 1 in the answer over 4 to show that 4 has been divided.
MULTIPLY 31 4)124 12 4 4	$1 \times 4 = 4$. Write 4 under 4.

SUBTRACT 31 4)124 12 4 4	Subtract: $4 - 4 = 0$. There is nothing to write.
CHECK	$4 \times 31 = 124$.
ANSWER	There are 31 fours in 124.

Copy, divide, and check:

1.	2)102	3)186	4)124	5)155	6)186	5)305
2.	2)124	4)248	3)213	7)147	8)168	5)355
3.	3)249	2)168	9)189	2)146	2)184	5)405
4.	5)205	2)108	8)328	3)276	7)287	4)284
5.	3)243	5)455	6)306	4)328	7)357	8)248
6.	6)126	6)246	3)219	4)168	7)217	9)279

What You Should Have Learned in This Chapter

In this chapter you have reviewed the arithmetic of the third grade.

If you have studied this chapter enough, you should be able to start the work of the next chapter.

Improvement Test No. 1

There are 10 problems in each improvement test. The number of problems you do correctly is your score. On page 305 you will find a blank form called an improvement table. Make a copy of this table. Keep your record of each improvement test in this table.

1. In 82 there are — tens and — ones.

2. A quarter is — cents. **3.** A dollar is — cents.

4. We write 137¢ as $——.

5. The boy and racer No. 2 weigh 197 pounds. How much does the boy weigh if the racer weighs 122 pounds?

6. How much more does racer No. 2 weigh than the boy in it? (See Prob. 5.)

7. Racer No. 9 weighs 136 pounds and the boy in it weighs 83 pounds. How much do both weigh?

8. It is 6 miles from Jimmie's home to the race track and back home. How many miles is it one way?

9. It is 2 miles from Frank's home to the race track. How many miles is it both ways?

10. On the way home Father bought 3 quarts of ice cream in pint boxes. How many pints did he buy?

Were you in the hard-workers' group in this chapter?

Scores										
							Hard-workers			
0	1	2	3	4	5	6	7	8	9	10

CHAPTER 2

USING COMMON MEASURES

Fun with the Calendar

JANUARY						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY						
				1	2	3
4	5	6	7	8	9	10
11	**12**	13	14	15	16	17
18	19	20	21	**22**	23	24
25	26	27	28			

MARCH						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

APRIL						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	**30**	31	

JUNE						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

JULY						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
	1	2	3	**4**	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER						
1	**2**	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER						
		1	2	3	4	5
6	7	8	9	10	11	**12**
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	**28**	29	30

DECEMBER						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	**25**	26	27	28
29	30	31				

The Number of Days in Each Month

"Thirty days have September, April,
June, and November.
All the rest have thirty-one,
Save February, which alone has twenty-eight,
With one day more one year in four."

Is the Poem Correct?

What does the first line of the poem tell you?

Look at the calendar. How many days does September have? How many days are there in April?

What does the second line of the poem say?

Look at the calendar for the month of August. How many days are there in August?

Is the poem correct?

Learn this little poem. It will help you to remember the number of days in each month.

Questions We Can Answer from the Calendar

1. How many days are there in each week? Name them.
2. How many full weeks are there in every month?
3. How many months are there in a year?
4. Do all months have the same number of days?
5. The first month of the year is —.
6. The last month of the year is —.
7. Jane said that there are 31 days in December. Was she correct?

8. Name all the months of the year and tell the number of days in each month.

9. Name the shortest month.

10. Which months have 30 days?

11. Which months have 31 days?

12. Bobbie's birthday comes on December 6, and Lucy's comes on December 1. Which one is older if they were born in the same year? How many days older?

13. Which is later in the year, July 4 or July 24?

14. Which is earlier in the year, May 1 or May 15?

15. If you do not already know, ask your teacher to tell you the names of all the holidays that are printed in **heavy type** on the calendar.

16. July has one day — than June.

17. February has — less days than January.

18. April and June each have — days.

Review Practice

Write the answers to these questions:

1. What is the sign of addition?
2. What is the sum of 4, 8, and 9?
3. How many months are there in a year?
4. How much less than 9 is 3?
5. What does 5 + 7 + 3 + 8 equal?
6. What does the sign ¢ stand for?
7. How many nickels are there in a quarter?
8. How many cents are there in a quarter?
9. How much less than 9 is 6?
10. How many inches are there in a foot?

11. How many more than 2 is 7?
12. When you add what is the answer called?
13. How do you find the difference between two numbers?
14. 7 is 2 more than —.
15. 5 is 2 less than —.

Add down. Check by adding up.

1.	2.	3.	4.	5.	6.	7.	8.
7	9	5	6	8	9	6	7
5	7	9	8	8	6	5	8
5	9	3	3	4	2	4	9
6	7	5	6	8	5	6	4

Add by endings:

9.	16	18	49	36	49	73	58	66
	7	6	5	9	7	8	8	6
10.	32	56	73	86	89	65	52	70
	8	4	9	5	4	8	7	3
11.	45	65	78	84	94	63	72	26
	3	6	3	7	6	9	7	7
12.	27	78	46	57	93	63	75	27
	6	7	7	5	7	7	6	7
13.	25	52	64	78	33	26	19	67
	7	9	9	5	8	9	7	7
14.	23	49	63	78	87	93	27	89
	8	9	8	9	8	8	9	6

Figuring the June Accounts

On the first day of July, Jane helped her grandmother figure her June accounts. In the account book Grandmother kept a list of the things she sold and the things that she had bought.

1. The egg account showed that she had sold $1.07 worth on June 2; $2.47 worth on June 11; $4.13 worth on June 15; and $3.78 worth on June 25. How much was this?

2. During June Grandmother sold cream for the following amounts: June 4, $5.73; June 13, $5.22; June 21, $6.58; June 28, $7.16. How much money did she get for cream in June?

3. Grandmother spent $3.95 for chicken feed, $1.35 for feeding pans, and $2.31 for chicken wire. How much did she spend?

4. If she sold her eggs for $11.45 and spent $7.61 on her chickens, how much did she have left?

5. Grandmother bought groceries with the money she received for the cream. She spent $5.36 the first week; $5.25 the second week; $6.17 the third week; and $5.57 the fourth week. How much did the groceries cost?

6. In which week did she spend the most? (Prob. 5.)

Review Practice

Add:

1.

3	4	8	4	6	8	8	5	9
8	9	2	8	5	3	5	9	9
4	3	5	3	5	3	3	3	9
5	7	6	8	8	6	4	6	2

2.

63	69	34	99	91	87	1	20
8	38	60	91	36	45	96	8
25	73	55	87	23	69	80	6
40	56	82	39	8	10	66	68

3.

3478	4955	1381	1269	6848	7735	8109
2751	1486	1293	2107	2833	1756	891

4.

900	800	700	?	500
100	200	300	400	?
			1000	1000

5. Each answer to the first three parts of Ex. 4 is —. The top numbers get smaller while the bottom ones get larger.

Subtract and check:

6.

364	679	548	693	598	823	705
223	225	397	484	308	475	579

7.

4165	3454	1074	5118	2957	4736
2392	1026	208	3003	164	770

8.

$94.37	$69.04	$56.22	$66.97	$99.05
56.32	45.08	30.09	30.89	7.93

9.	$34.67	$99.60	$53.00	$87.62	$11.18
	5.78	30.67	33.90	74.02	10.03
10.	$72.08	$86.80	$61.08	$92.07	$90.82
	11.87	39.06	39.06	70.63	80.02
11.	7045	5900	7206	8740	1270
	4154	3890	2000	7830	600
12.	900	800	700	600	500
	200	200	200	200	200

13. In Ex. 12, each answer is 100 more than the next answer at the right. Why?

Write the answers to these questions:

1. How many half dollars are there in $1?

2. How many dimes are there in $1?

3. How many weeks are there in one month?

4. How many days are there in a week?

5. Which month of the year has the fewest days?

6. How many more days are there in November than there are in February?

7. How many days are there in June, July, and August altogether?

8. Which months of the year have 31 days?

9. Write the numbers between 31 and 42 in words.

10. Write the number for these words: one thousand, three hundred sixteen.

11. The number 56 has — tens and — ones.

Making a Flower Bed

1. Down by the creek Jane found 2 black stones, 13 white stones, 7 grey stones, and 12 red stones. How many stones did she find?

2. She found 23 stones yesterday and 34 today. How many more did she find today than yesterday?

3. She keeps the stones in piles under the big tree where she plays. There are 21 red stones, 8 grey stones, 15 black stones, and 13 white stones. How many stones has she?

4. Jane used 11 stones on each side of a flower bed and 3 stones on each end. How many stones did it take for the sides and ends of the bed? Remember there are two ends and two sides.

5. Jane has 29 small stones. She needs 53 stones for the sides and ends of another flower bed. How many more must she find?

6. Grandmother and Jane planted 33 flower bulbs in the first flower bed and 16 flower bulbs in the other. How many bulbs did they plant?

7. Grandmother and Jane set out some new rose bushes in the rose garden. They set out 11 red rose bushes, 14 white ones, and 4 pink ones. How many rose bushes did they set out?

8. How many red and pink rose bushes were there? (See Prob. 7.)

Practice in Subtracting

Use an answer sheet and subtract:

1.	55	25	42	73	95	38	84
	32	13	41	63	82	25	70
2.	96	64	27	83	52	36	41
	17	19	18	50	25	19	34
3.	53	68	47	88	27	92	34
	36	49	18	29	26	30	8
4.	90	50	40	30	70	20	60
	35	26	21	15	58	19	33
5.	57	65	78	27	34	91	26
	14	53	49	9	15	37	17
6.	45	28	23	46	67	93	37
	16	11	16	34	49	34	28
7.	72	72	72	72	72	72	72
	8	18	28	38	48	58	68

8. Each answer in Ex. 7 is — larger than the next answer at the right. Why?

9. Copy and subtract: 76 − 38; 87 − 49; 73 − 35.

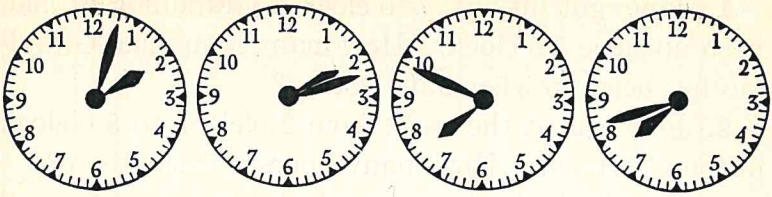
Multiplication Review

Write the answers on an answer sheet:

1.	8	7	9	5	3	6	20
	3	2	2	3	3	2	2
2.	7	4	3	9	6	10	5
	3	2	2	3	3	3	2
3.	32	22	14	34	13	31	20	63
	3	3	2	2	3	2	3	2
4.	93	84	51	72	82	90	71	54
	3	2	3	2	3	3	3	2
5.	82	70	62	11	94	51	63	74
	2	3	2	3	2	2	3	2
6.	321	203	313	144	233	220	424
	3	2	3	2	3	3	2
7.	622	713	800	923	811	602	732
	3	3	3	3	3	3	3
8.	824	933	713	620	831	522	404
	2	2	2	2	2	2	2

9.	$3 \times 2 + 1 =$	$4 \times 3 + 2 =$	$5 \times 6 + 1 =$
10.	$9 \times 2 + 2 =$	$2 \times 7 + 3 =$	$4 \times 4 + 1 =$
11.	$4 \times 6 + 3 =$	$7 \times 3 + 2 =$	$3 \times 5 + 1 =$
12.	$6 \times 2 + 2 =$	$8 \times 3 + 1 =$	$5 \times 4 + 2 =$

How Many Hours in a Day?



All of the clocks show daytime

"The hands of the clock are at the same places now that they were when you got up this morning," said Father.

"That's right," said Jimmie. "This morning they were at 7:30. Now (this evening) they are again at 7:30. That makes 12 hours during the day."

"But the clock does not rest while you are asleep," said Father. "When you get up tomorrow at 7:30, the hands will have gone all around the clock again. That will be 12 hours during the night."

"From one morning at 7:30 until the next morning at 7:30 is 24 hours," said Jimmie.

"Yes," said Father. "There are 24 hours in one day."

From 12 o'clock at night until 12 o'clock noon is called morning. The 6 hours from 12 o'clock noon until 6 o'clock is called afternoon. The next 6 hours, from 6 o'clock until 12 o'clock at night, is called evening.

1. Tell the exact time by each clock.

2. The difference in time shown by the first and second clocks is — minutes.

3. Which of these clocks shows time in the morning?

Telling the Number of Hours

1. Jane got up at 7 o'clock. Grandmother had been up since 5 o'clock. How many hours had Grandmother been up when Jane got up?

2. Jane was at the creek from 2 o'clock to 5 o'clock in the afternoon. How many hours was she there?

3. Jimmie slept 9 hours, worked 6 hours, and rested 9 hours. Are these all the hours in a day?

4. Grandfather sleeps 8 hours every day. How many hours of the day is he awake?

5. From 9 o'clock in the morning until 9 in the evening is — hours.

6. From 12 o'clock noon until 6 o'clock in the afternoon is — hours.

7. From 1 o'clock in the afternoon until 5 o'clock in the afternoon is — hours.

Rapid Practice in Multiplying

You should be able to copy and multiply in 4 minutes:

1.	8	83	70	72	21	60	21	10
	4	2	2	3	3	2	7	2
2.	100	211	322	301	210	101	944	
	8	6	4	9	7	8	2	

Multiply orally in 1 minute:

3.	$3 \times 7 =$	$6 \times 2 =$	$9 \times 3 =$	$7 \times 2 =$
4.	$5 \times 3 =$	$8 \times 2 =$	$7 \times 3 =$	$8 \times 3 =$
5.	$3 \times 9 =$	$3 \times 5 =$	$2 \times 8 =$	$6 \times 3 =$

Review Practice

Add. Use an answer sheet.

1.	$8.36	$2.25	$3.67	$1.59	$8.85	$1.78
	5.87	9.48	2.84	7.63	2.59	7.45
2.	$4.79	$5.28	$3.45	$2.27	$3.47	$3.75
	7.68	3.76	5.29	1.98	4.99	2.98
3.	846	643	773	152	294	929
	529	799	849	717	305	158
4.	503	400	300	730	706	810
	300	8	507	80	600	310
		40		6		55
5.	187	458	805	319	362	867
	339	507	600	581	567	346
6.	400	206	407	8000	605	5300
	950	700	960	67	567	508

Review Questions

Copy these sentences and fill in the blanks:

1. In the number 78 there are — tens and — ones.

2. The number 563 equals — hundreds, — tens, and — ones.

3. There are — hours in a day.

4. In 654 there are 6 —, 5 —, and 4 —.

5. To answer the question "How many more?", "How much greater?", or "What is the difference?", we —.

6. The $ in the $3 means —.

7. $8.46 is read 8 — and 46 —.

8. $.67 is read 67 —.

9. The period in $6.58 is called a cents' —.

10. The difference between 78 and 45 is —.

11. 43 is — greater than 17.

12. 16 is — more than 11.

13. 11 + 10 equals —. 20 + 30 equals —.

Write these and obey the signs:

14.	8 + 7 + 6 =	5 + 9 + 4 =	5 + 7 + 9 =
15.	7 + 6 + 8 =	9 + 4 + 6 =	3 + 9 + 5 =
16.	7 + 9 + 8 =	6 + 8 + 5 =	7 + 5 + 7 =
17.	6 + 9 + 8 =	7 + 3 + 5 =	5 + 6 + 4 =
18.	7 + 9 + 3 =	6 + 3 + 1 =	8 + 8 + 7 =
19.	9 + 8 + 8 =	9 + 7 + 8 =	8 + 6 + 7 =
20.	4 + 6 + 8 =	8 + 5 + 4 =	9 + 9 + 9 =
21.	6 + 6 + 7 =	9 + 9 + 5 =	6 + 9 + 4 =

Division Review

Give the answers to these questions orally:

1. There are ? 2's in 10.
2. There are ? 3's in 27.
3. There are ? 3's in 15.
4. There are ? 3's in 18.
5. There are ? 2's in 8.
6. There are ? 2's in 12.
7. There are ? 3's in 21.
8. There are ? 3's in 24.
9. There are ? 5's in 15.
10. There are ? 8's in 24.
11. There are ? 4's in 8.
12. There are ? 3's in 12.

Copy and write the answers:

1.	$2\overline{)8}$	$2\overline{)10}$	$2\overline{)18}$	$2\overline{)16}$	$6\overline{)18}$	$2\overline{)6}$
2.	$3\overline{)18}$	$3\overline{)9}$	$3\overline{)21}$	$3\overline{)6}$	$3\overline{)27}$	$3\overline{)15}$
3.	$3\overline{)24}$	$2\overline{)14}$	$2\overline{)12}$	$3\overline{)12}$	$4\overline{)16}$	$4\overline{)24}$
4.	$8\overline{)24}$	$6\overline{)12}$	$8\overline{)16}$	$7\overline{)21}$	$4\overline{)12}$	$9\overline{)27}$

Give orally the missing word or number in each blank:

1. The sign $\div$ is read —.

2. There are — nines in 27.

3. We find $\frac{1}{2}$ of a number by dividing by —.

4. We can divide a thing into thirds by cutting it into — equal parts.

5. $\frac{1}{3}$ of 18 is —.

6. To find $\frac{1}{3}$ of a number, divide the number by —.

7. If anything is cut into 2 equal parts, each part is called one —.

8. $27 \div 9 =$ —. **9.** $27 \div 3 =$ —.

10. If anything is cut into 4 equal parts, each part is called one —.

11. $12 \div 2 =$ —. $12 \div 3 =$ —. $12 \div 4 =$ —.

12. The answers in Ex. 11 are 6, 4, and —. The answers grow smaller. Can you tell why?

13. We can divide a thing into fifths by cutting it into — equal parts.

14. $\frac{1}{2}$ of $8 =$ —.

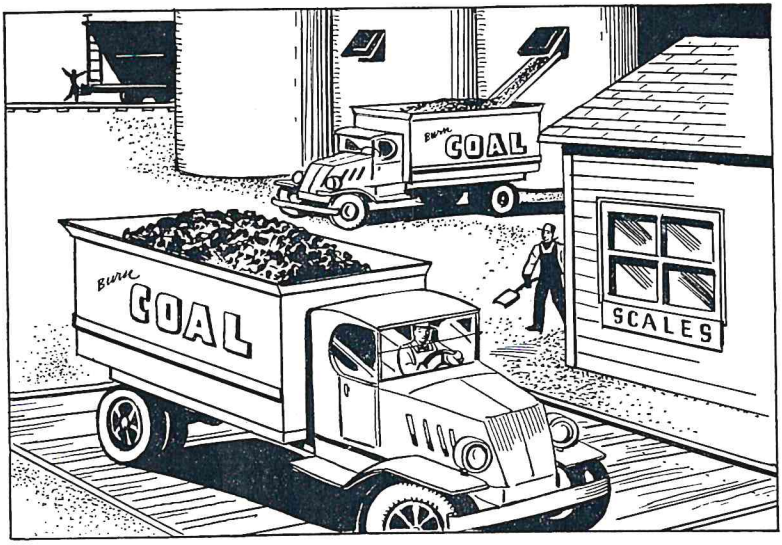
15. $8 \div$ — $= 4$.

16. $14 \div 2 =$ —.

17. $\frac{1}{3}$ of $12 =$ —.

18. $12 \div$ — $= 4$.

19. $14 \div 7 =$ —.



Jimmie went with his father to the coal yard. While his father was attending to some business there, Jimmie watched a man weigh coal as it was loaded on trucks at the yard. When the driver finished weighing the coal, he wrote 60,989 pounds on a blackboard in the coal yard. This number is read sixty thousand, nine hundred eighty-nine pounds.

60,989 has	60 thousands	60,000
	9 hundreds	900
	8 tens	80
	9 ones	9
		60,989

26,891 = twenty-six thousand, eight hundred ninety-one
37,842 = thirty-seven —, eight — forty-two

Read these numbers:

1. 76,854	31,906	65,002	99,000
2. 58,123	90,607	24,652	30,000
3. 70,008	68,564	90,067	87,900
4. 67,890	99,999	67,000	10,000

Write the numbers from:

5. 10,091 to 10,101 — 24,997 to 25,005
6. 46,795 to 46,800 — 68,890 to 68,900
7. 30,000 to 30,010 — 89,996 to 90,000

Count from:

8. 10,271 to 10,300 — 46,980 to 47,000
9. 30,000 to 30,021 — 91,964 to 92,000

Say the numbers that should be in the blanks:

10. 7 is — ones.
11. 96 is — tens, and — ones.
12. 125 is — hundred, — tens, and — ones.
13. 4,621 is — thousands, — hundreds, — tens, and — one.
14. 88,687 is — thousands, — hundreds, — tens, and — ones.
15. 68,287 is — thousands, — hundreds, — tens, and — ones.
16. 70,000 is — thousands, — hundreds, — tens, and — ones.
17. 89,008 is — thousands, — hundreds, — tens, and — ones.
18. 63,706 is — thousands, — hundreds, — tens, and — ones.
19. 50,500 is — thousands, — hundreds.

Carrying in Multiplying

Aunt Mary took six dozen baby chicks out to a little coop. "How many are there?" asked Jane. How many are 6 times 12?

12 ×6 72	*Question:* 6 × 12 = —. 1. Think 6 × 2 = 12. Write 2 under the 2 and 6. 2. Remember the 1 which we say is "1 to carry." 3. Think 6 × 1 = 6. Add the 1 carried. 4. 6 + 1 = 7. Write 7 before 2 in the answer. *Answer:* 6 × 12 = 72.
46 ×4 184	*Question:* 4 × 46 = —. 1. Think 4 × 6 = 24. Write 4 under the 6 and 4. 2. Remember the 2 which we say is "2 to carry." 3. Think 4 × 4 = 16. Add the 2 carried. 4. 16 + 2 = 18. Write 18 before the 4 in the answer. *Answer:* 4 × 46 = 184.

Tell how to get each figure in these answers:

26	47	46	37	56	38
×2	×3	×2	×3	×4	×4
52	141	92	111	224	152

Copy these problems on your paper and multiply:

1.	34	29	45	49	56	96	56	48
	3	3	2	4	3	2	2	3
2.	23	36	27	53	68	25	33	87
	4	3	2	5	4	5	4	3

3.	93	68	57	38	27	89	75	27
	4	2	3	3	5	2	3	4
4.	24	84	57	63	22	34	43	16
	7	4	2	4	9	6	8	5
5.	37	26	18	61	33	49	81	66
	4	4	5	4	5	3	2	4

Practice in Multiplying

Use an answer sheet and multiply. Remember to carry when it is necessary.

1.	67	76	89	98	46	64	79	97
	4	5	4	5	5	5	4	5
2.	17	62	78	87	19	91	37	28
	4	5	4	5	4	5	4	5
3.	76	58	46	95	29	86	87	63
	4	5	4	5	4	5	4	5
4.	45	54	45	54	45	54	45	54
	9	6	8	7	5	3	4	2
5.	45	51	24	65	500	400	45	65
	2	4	3	5	7	8	6	4
6.	83	57	48	85	75	14	45	55
	4	5	3	2	4	6	7	9

In multiplying, notice that you get the same answer for some of these examples. Can you tell why?

7.	4	5	7	4	3	4	4	2
	5	4	4	7	4	3	2	4
8.	6	4	4	8	9	4	6	5
	4	6	8	4	4	9	5	6
9.	7	5	9	5	8	5	5	3
	5	7	5	9	5	8	3	5

Copy and multiply. Put the dollar sign and cents' point in the right place.

10.	\$.87	\$.98	\$.73	\$1.00	\$.96	\$1.12
	4	5	4	5	4	2
11.	\$.56	\$1.20	\$1.42	\$.97	\$.25	\$.32
	3	4	3	3	5	5

Answer these orally:

12.	$2 \times 4 + 1 =$	Say 2 fours and 1	
	2 fours are 8	$8 + 1 = 9$	$2 \times 4 + 1 = 9$
13.	$2 \times 3 + 1 =$	$5 \times 2 + 2 =$	$2 \times 6 + 3 =$
14.	$2 \times 5 + 2 =$	$6 \times 2 + 3 =$	$3 \times 2 + 2 =$
15.	$4 \times 2 + 1 =$	$3 \times 4 + 3 =$	$4 \times 5 + 2 =$
16.	$4 \times 8 + 2 =$	$4 \times 6 + 1 =$	$8 \times 4 + 3 =$
17.	$4 \times 4 + 1 =$	$5 \times 5 + 2 =$	$9 \times 4 + 1 =$
18.	$5 \times 4 + 3 =$	$4 \times 9 + 1 =$	$6 \times 4 + 2 =$
19.	$4 \times 3 + 2 =$	$7 \times 4 + 3 =$	$4 \times 7 + 1 =$
20.	$5 \times 6 + 1 =$	$5 \times 7 + 2 =$	$6 \times 5 + 3 =$
21.	$7 \times 5 + 3 =$	$5 \times 8 + 1 =$	$5 \times 9 + 2 =$

Practice in Dividing

	Question:	How many 5's are there in 215? Think, the next number smaller than 21 that can be divided exactly by 5 is 20.
	Divide	The number of 5's in 20 is 4. Write 4 above the 1 of 21.
43	*Multiply*	$4 \times 5 = 20$. Write 20 under 21.
5)215	*Subtract*	$21 - 20 = 1$. Write 1.
20↓	*Compare*	The 1 left over is less than 5.
15	*Bring down*	5
15	*Divide*	The number of 5's in 15 is 3. Write 3 in the answer above the 5 of 215.
	Multiply	$3 \times 5 = 15$. Write 15 under 15.
	Subtract	$15 - 15 = 0$. Nothing to write.
	Answer:	There are 43 fives in 215.

Copy and divide:

1.	5)30	6)24	8)24	5)45	7)35	9)27
2.	4)48	4)84	5)55	4)88	2)68	3)96
3.	3)81	5)85	4)64	5)95	2)58	5)65
4.	5)80	4)76	7)77	3)36	2)48	2)96

Divide each of these numbers by 4:

5.	248	288	132	124	252	232	260
6.	344	256	316	184	332	140	168
7.	284	296	212	264	244	292	336

The Fruit Cupboard

1. "We have 4 pint jars of raspberry sauce," said Mother. "How many quarts does that make?"

2. "I have found 6 more quart jars of raspberry sauce on the bottom shelf," said Jane. How many quarts were there in all? (See Prob. 1.)

3. "Betty's mother buys sauce in gallon pails," said Jane. There are 4 quarts in a gallon. How many gallons of raspberry sauce do 8 quarts make?

4. When they counted the jars of cherry preserves, they found several jars that held $\frac{1}{2}$ pint each. How many pints are there in 8 half-pint jars?

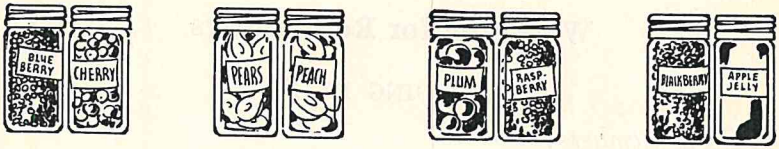
5. "These preserves would cost $.30 a pint at the store," said Mother. How much would 3 pints of the cherry preserves cost at the store?

6. There are 6 pints of peach pickles, 12 pints of watermelon pickles, and 14 pints of cucumber pickles. How many pints of pickles are there altogether?

7. How many quarts are there in 32 pints?

8. Mother had a 2-gallon jar filled with dill pickles. How many quarts of dill pickles were there?

9. If dill pickles are worth 15 cents a quart, how much are the 8 quarts of pickles worth?



10. Jane decided to arrange their pint jars of preserves in pairs so that she could tell how many quarts there were. Look at the picture and tell how many quarts there were.

11. Draw a picture to show how many quarts there are in 6 pints.

12. Make a chart like this on your paper and fill in the blanks.

14 pints	=	— quarts
6 pints	=	— quarts
16 pints	=	— quarts
12 quarts	=	— gallons
20 quarts	=	— gallons
16 cups	=	— pints

More Practice in Division

Copy and divide:

1. $4\overline{)76}$ $3\overline{)69}$ $4\overline{)88}$ $2\overline{)76}$ $4\overline{)64}$ $3\overline{)45}$ $4\overline{)44}$

2. $3\overline{)54}$ $4\overline{)72}$ $4\overline{)84}$ $2\overline{)36}$ $3\overline{)81}$ $3\overline{)48}$ $4\overline{)56}$

3.	$4\overline{)60}$	$3\overline{)36}$	$5\overline{)95}$	$5\overline{)65}$	$3\overline{)84}$	$4\overline{)48}$	$5\overline{)75}$
4.	$3\overline{)93}$	$2\overline{)98}$	$3\overline{)96}$	$2\overline{)50}$	$4\overline{)96}$	$3\overline{)78}$	$3\overline{)63}$
5.	$6\overline{)72}$	$4\overline{)36}$	$5\overline{)45}$	$3\overline{)99}$	$3\overline{)39}$	$4\overline{)84}$	$2\overline{)68}$

Watching for Remainders

Dividing by 2

Even numbers:

2 4 6 8 10

These numbers are called **even** numbers, because they can be divided exactly by 2.

Name the even numbers from 12 through 18.

Odd numbers:

1 3 5 7 9

These numbers cannot be divided exactly by 2. They are called **odd** numbers. When we try to divide them into groups of 2's, there is always one left over. In dividing by 2 there will never be more than 1 left over. $9 \div 2 = 4$ and 1 left over. The number left over is called the *remainder*.

```
  4
2)9
  8
  1
```

To divide 9 by 2:
Think: The next number smaller than 9 that can be divided exactly by 2 is 8.
Think: $8 \div 2 = 4$. Write 4 above 9.
Think: $4 \times 2 = 8$. Write 8 under 9.
Subtract 8 from 9. The remainder is 1. It is less than 2.
$9 \div 2 = 4$ with a remainder of 1.

Copy these examples on your paper and put in the missing numbers:

1. 5	**2.** ?	**3.** 7	**4.** ?	**5.** 9
2)11	2)7	2)15	2)5	2)19
10	6	?	?	18
?	1	1	?	?
6. ?	**7.** ?	**8.** ?	**9.** ?	**10.** 3
2)13	2)3	2)17	2)9	2)7
12	2	?	?	?
?	1	?	?	?

11. Name the odd numbers from 11 through 19.

Dividing by 3

What is the next number smaller than each of these numbers that can be divided exactly by 3?

1. 8 13 25 17 20 28 4 19 11

2. 7 26 14 22 16 23 5 29 10

3. Count by 3's from 3 to 27. Thus, 3, 6, 9, —, —, —, —, —, 27.

4. Count by 3's from 2 to 29. Thus, 2, 5, 8, —, 14, 17, —, —, —, 29.

A
$$\begin{array}{r} 5 \\ 3\overline{)15} \\ \underline{15} \end{array}$$

B
$$\begin{array}{r} 1 \\ 3\overline{)4} \\ \underline{3} \\ 1 \end{array}$$

C
$$\begin{array}{r} 5 \\ 3\overline{)17} \\ \underline{15} \\ 2 \end{array}$$

Notice that in Ex. A the division is exact. There is nothing left over. There is no remainder.

In Ex. B, there is 1 left over. We place a 3 under the 4, because 3 is the next number below 4 that can be divided by 3 exactly.

In Ex. C we use 15, because it is the next number below 17 that can be divided exactly by 3.

Copy these examples and put in the missing numbers:

1. $4 \div 3 = 1$ and a remainder of —.

2. $5 \div 3 = 1$ and a remainder of —.

3.
$$\begin{array}{r} 5 \\ 3\overline{)16} \\ \underline{15} \\ ? \end{array}$$

4.
$$\begin{array}{r} 8 \\ 3\overline{)26} \\ \underline{?} \\ ? \end{array}$$

5.
$$\begin{array}{r} 4 \\ 3\overline{)13} \\ \underline{12} \\ ? \end{array}$$

6.
$$\begin{array}{r} ? \\ 3\overline{)10} \\ \underline{?} \\ ? \end{array}$$

7.
$$\begin{array}{r} ? \\ 3\overline{)8} \\ \underline{6} \\ ? \end{array}$$

8.
$$\begin{array}{r} 6 \\ 3\overline{)19} \\ \underline{?} \\ ? \end{array}$$

9.
$$\begin{array}{r} ? \\ 3\overline{)28} \\ \underline{27} \\ ? \end{array}$$

10.
$$\begin{array}{r} ? \\ 3\overline{)23} \\ \underline{?} \\ ? \end{array}$$

11.
$$\begin{array}{r} 7 \\ 3\overline{)22} \\ \underline{?} \\ ? \end{array}$$

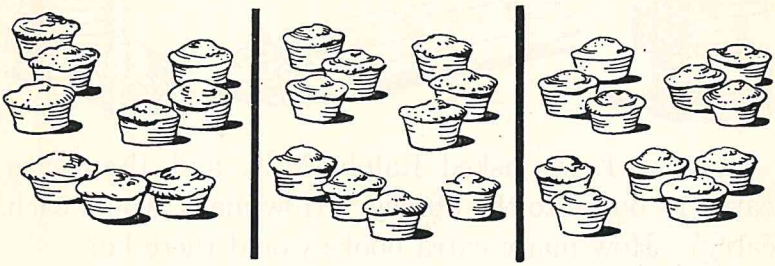
12.
$$\begin{array}{r} ? \\ 3\overline{)25} \\ \underline{24} \\ ? \end{array}$$

13.
$$\begin{array}{r} 6 \\ 3\overline{)20} \\ \underline{?} \\ ? \end{array}$$

14.
$$\begin{array}{r} ? \\ 3\overline{)29} \\ \underline{?} \\ ? \end{array}$$

15. Can nine pennies be divided among Alice, Jane, and Jimmie so that each will get the same number?

16. Can ten pennies be divided among Alice, Jane, and Jimmie so that each will get the same number?



					3			3
		3			3			3
Three 3's		3	Three 3's and 1		3	Three 3's and 2		3
		3			1			2
		9			10			11
3	6	9	12	15	18	21	24	27

We have already divided these numbers by 3, and we know that they can be divided exactly. No other numbers smaller than 27 can be divided exactly by three.

To divide 7 by 3:

```
  2
3)7
  6
  1
```

Think: The next number smaller than 7 that can be divided exactly by 3 is 6.

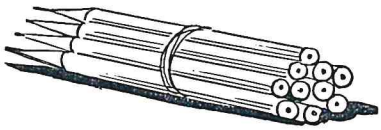
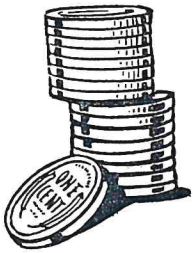
Think: $6 \div 3 = 2$. Write 2 above the 7.

Think: $2 \times 3 = 6$. Write 6 under the 7.

Subtract 6 from 7. The remainder is 1. Notice that 1 is less than 3.

$7 \div 3 = 2$ with a remainder of 1.

Division Problems

1. Miss Lewis asked Ralph, Milo, and Jimmie to carry 14 books to the library. How many would each carry? How many extra books would there be?

	To divide 14 by 3:
4	*Think:* The next number smaller than 14 that
3)14	can be divided exactly by 3 is 12.
12	*Think:* $12 \div 3 = 4$. Write 4 above the 4 of 14.
2	*Think:* $4 \times 3 = 12$. Write 12 under 14.
	Subtract 12 from 14 to get the remainder 2. The remainder is less than 3.
	$14 \div 3 = 4$ with a remainder of 2.

2. Mother had 17 pennies in her purse. She divided them between Jane and Jimmie. Each received — pennies. There was — penny left over.

3. Miss Lewis has 10 pencils. To how many pupils can she give 3 pencils each? How many pencils will be left over?

4. Alfred has 25 tin soldiers. One day when Bobbie and Ralph were playing with him, they made 3 armies of them. If each army had the same number of soldiers, how many were there in each army, and how many were left?

5. Mary and Alice made 7 paper dolls. How many will there be for each to have the same number? How many will be left?

6. Fred, Frank, and George found a bag with 17 marbles in it. How many is that for each, and how many will be left over?

7. Grandmother gave George, Harriet, and Floyd 29 cents, all the change she had with her. They divided it equally among themselves and had some money left over. How much did each get and how much was left over?

Watching for Remainders in Division

1.	$3\overline{)19}$	$2\overline{)15}$	$3\overline{)5}$	$2\overline{)17}$	$3\overline{)25}$
2.	$4\overline{)29}$	$3\overline{)16}$	$5\overline{)27}$	$2\overline{)19}$	$3\overline{)11}$
3.	$3\overline{)14}$	$4\overline{)30}$	$3\overline{)26}$	$2\overline{)13}$	$3\overline{)22}$
4.	$2\overline{)3}$	$3\overline{)29}$	$2\overline{)9}$	$3\overline{)17}$	$2\overline{)11}$
5.	$4\overline{)37}$	$5\overline{)47}$	$3\overline{)20}$	$4\overline{)34}$	$2\overline{)7}$
6.	$5\overline{)42}$	$4\overline{)19}$	$5\overline{)43}$	$5\overline{)14}$	$4\overline{)38}$
7.	$3\overline{)28}$	$4\overline{)23}$	$5\overline{)32}$	$4\overline{)26}$	$5\overline{)38}$
8.	$3\overline{)13}$	$5\overline{)17}$	$5\overline{)23}$	$4\overline{)25}$	$5\overline{)47}$
9.	$5\overline{)29}$	$5\overline{)21}$	$3\overline{)23}$	$2\overline{)5}$	$5\overline{)28}$

How to Check Division with a Remainder

	THE CHECK
9	
4)39	
36	9 is the answer
3	×4 is the number 39 is divided by
	36
	+3 is the number left over (remainder)
	39 is the number being divided

Divide and check:

1.	3)10	2)13	3)13	2)17	3)23
2.	4)27	2)15	3)7	5)47	2)19
3.	4)35	5)41	4)30	2)11	3)8
4.	2)9	5)49	4)29	4)39	2)5

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Use a calendar to answer many questions.
2. Tell the number of hours in a day.
3. Tell the number of hours from one hour of the day to another.
4. Read and write numbers through 99,999.
5. Carry in multiplying.
6. Use a cup, a pint, and a quart to measure liquids.
7. Use 2, 3, 4, and 5 in dividing small numbers when there is a remainder.
8. Check examples in division which have remainders.
9. Tell whether a number is an even number or an odd number.

Are You Ready for the Next Chapter?

1. Can you do tests 6, 7, and 8 without making errors? If so, you may omit the Remedial Practice (Sets 6, 7, and 8) and study pages 279-280.

2. If you make errors, study the examples and problems you do not know very well on the pages shown in **heavy type.**

3. Write the answers to tests 6 and 7 on answer sheets.

Diagnostic Test No. 6: Carrying in Multiplication **64**

1.	57	69	75	82	37	45	26	35
	2	3	4	5	3	4	2	4
2.	48	65	27	29	32	58	82	37
	5	4	3	2	5	3	4	4
3.	28	34	26	42	53	64	58	74
	3	5	3	5	4	5	2	3

Diagnostic Test No. 7: Division with Remainders **65**

1.	2)7	3)8	2)5	3)10	2)3	3)7	2)9
2.	3)14	2)19	3)16	2)11	3)13	2)15	
3.	2)17	3)28	2)13	3)29	3)22	3)23	
4.	3)25	3)17	3)20	3)19	3)11	3)26	

1. How many days are there in each of these months: September, April, June, and November?

2. How many days are there in each of these months: January, May, July, and December?

3. How many hours are there from 12 o'clock at night until 12 o'clock noon?

4. Jane does her homework in arithmetic from 7 o'clock at night until 7:30 at night. What part of an hour does she spend doing her homework in arithmetic?

5. Jane reads from 7:30 to 8:30 each night. How many hours does she read each night?

REMEDIAL PRACTICE IN CARRYING IN MULTIPLICATION (SET 6)

1.

57	Think $2 \times 7 = 14$. Write 4, carry 1.
2	Think $2 \times 5 = 10$. $10 + 1$ (carried) $= 11$.
114	Write 11. The answer is 114.

69	Think $3 \times 9 = 27$. Write 7, carry 2.
3	Think $3 \times 6 = 18$. $18 + 2$ (carried) $= 20$.
207	Write 20. The answer is 207.

75	Think $4 \times 5 = 20$. Write 0, carry 2.
4	Think $4 \times 7 = 28$. $28 + 2$ (carried) $= 30$.
300	Write 30. The answer is 300.

82	Think $5 \times 2 = 10$. Write 0, carry 1.
5	Think $5 \times 8 = 40$. $40 + 1$ (carried) $= 41$.
410	Write 41. The answer is 410.

Remedial Practice in Dividing with Remainders (Set 7)

	3	2	2	3	1	2	4
1.	2)7	3)8	2)5	3)10	2)3	3)7	2)9
	6	6	4	9	2	6	8
	1	2	1	1	1	1	1
	4	9	5	5	4	7	
2.	3)14	2)19	3)16	2)11	3)13	2)15	
	12	18	15	10	12	14	
	2	1	1	1	1	1	
	8	9	6	9	7	7	
3.	2)17	3)28	2)13	3)29	3)22	3)23	
	16	27	12	27	21	21	
	1	1	1	2	1	2	
	8	5	6	6	3	8	
4.	3)25	3)17	3)20	3)19	3)11	3)26	
	24	15	18	18	9	24	
	1	2	2	1	2	2	

Remedial Practice in Important Questions (Set 8)

1 and **2.** "Thirty days have September, April,
June, and November.
All the rest have thirty-one.
Save February, which alone has twenty-eight
With one day more one year in four."

(This one year in four is called **leap year.**)

3. 12 hours from 12 o'clock at night until 12 o'clock noon.

4. From 7 o'clock until 7:30 at night is one-half hour.

Improvement Test No. 2

1. Which months in the year have 30 days?
2. Which months in the year have 31 days?
3. Which month has less than 30 days?
4. How many quarts of milk are there in a 2-gallon pail if the pail is full?
5. How many whole gallons of milk are there in 9 quarts? How many quarts are left over?
6. Divide 19 by 2. What is left over?
7. Divide 37 by 3. What is left over?
8. How much colder is it when the thermometer is at 40° than when it is at 55°?
9. What time is it when the large hand of the clock is 3 little marks past IV, and the small hand is a little past IX?
10. Jane goes to bed at 8 o'clock in the evening and gets up at 8 o'clock in the morning. How many hours does she spend in bed?

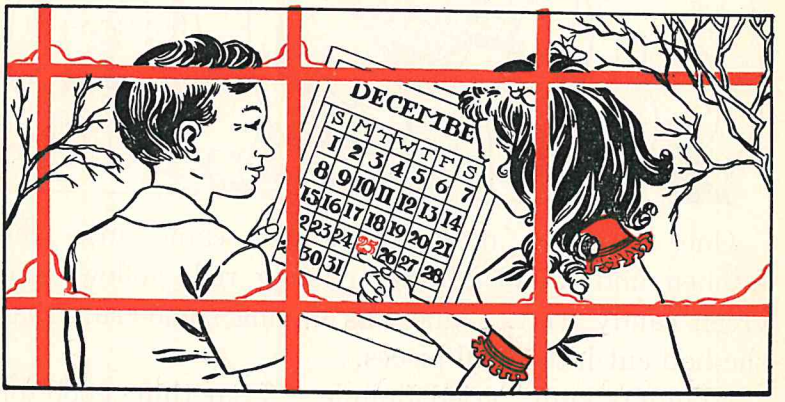
Were you in the hard-workers' group in this chapter?

Scores	
	Hard-workers
0 1 2 3 4 5 6 7 8 9 10	

CHAPTER 3

USING THE CALENDAR AND MULTIPLICATION

Finding Christmas on the Calendar



1. How many days are there in December?
2. Find Christmas day on your calendar.
3. If today is Monday, December 16, what day of the month was last Monday?
4. How many days are there between December 17 and Christmas?
5. What is the name of the month before December?
6. Jane and Jimmie plan to leave on the day after Christmas to visit their grandmother. On what day of the month will they leave?
7. If today is Wednesday, December 18, how many more shopping days are there until Christmas?

A Christmas Cake

One Saturday morning Jimmie came into the kitchen and found Mother cutting red, yellow, and green candy fruit. Jane was mixing some fruit that she had cut into small pieces.

"Yummy yum," cried Jimmie. "Something good for supper."

"Supper!" replied Jane. "This is the Christmas fruit cake we are making."

"Christmas!" said Jimmie. "Today is only the first day of December. There are twenty-four days until Christmas."

"Fruit cake must be at least three weeks old to be very good," said Mother.

Jane asked, "What date will three weeks from today be?"

1. Three weeks from the first day of December will be the — of December.

2. What day of the month will tomorrow be?

3. How many days are there between the twenty-second of December and Christmas?

4. What is the name of the month after December?

5. If today is Saturday, December 1, what day of the month will next Saturday be?

6. How many days are there between Christmas and New Year's Day?

Making Christmas Gifts

1. Early in December the children in the fourth grade started making Christmas gifts. Doris made a scrapbook for her cousin. She pasted 3 pictures on each page. How many did it take to fill 18 pages?

2. Doris made 4 scrapbooks. She used 54 pictures in each. How many pictures did she use?

3. She used 15 inches of silk cord to tie each scrapbook. How many inches of cord did she use for the 4 scrapbooks?

4. Four of the girls dressed dolls. Each girl used 24 inches of muslin. How many inches did all of them use?

5. George collected sets of pictures of cars. He needed 26 pictures for each set. How many did he need for 4 sets?

6. Seventeen of the pupils made 4 Santa Clauses each out of heavy red paper. How many did they make in all?

7. Jane painted some pictures on glass and framed them with black paper. If she used 17 inches of paper for each picture, how many inches did she use for 5 pictures?

8. Donald made some games from colored pictures. If it took 34 pieces to make a game, how many pieces did he take to make 3 games?

9. Billie made a picture book. He had 15 large sheets of black paper. He cut each sheet into 3 smaller sheets. How many small sheets of black paper did he have?

10. He used 28 inches of black paper to bind each cover of the book. How many inches did he use to bind the front and back covers?

11. Mary painted and decorated 5 coffee cans for candy boxes. She found that it took 36 pieces of candy to fill each box. How many pieces will it take to fill the 5 boxes?

12. David is making a bed for his dog. He cut a board into 2 pieces that were each 36 inches long. How long was the board before David cut it?

13. Charles made some wooden toys. He wanted to get 5 pieces of wood each 12 inches long from one board. How long would a board need to be to make the 5 pieces?

14. Five girls made 15 paper Christmas trees each. They colored them green. How many did they make in all?

15. Fourteen girls made 7 Christmas cards each. How many cards did they make?

16. Seventeen girls made 2 doll dresses each. How many did they make?

Using Six in Multiplying

Remember that multiplying is a short way of adding. Study these columns. Notice that there are six numbers in each column.

2's	3's	4's	5's	6's	7's	8's	9's
2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
12	18	24	30	36	42	48	54

The first column tells us that six 2's are —.

The last column tells us that six 9's are —.

Six 7's = ?	Six 4's = ?	Six 8's = ?
Six 3's = ?	Six 6's = ?	Six 5's = ?
Three 6's = ?	Four 6's = ?	Five 6's = ?

Multiplying by Six

Make practice cards for these new multiplication facts. Study each fact carefully.

7	9	6	6	6	6	8
6	6	8	6	7	9	6
42	54	48	36	42	54	48

Give the answers orally:

1. $6 \times 8 =$	Six 8's =	$8 \times 6 =$	Eight 6's =
2. $6 \times 4 =$	Six 4's =	$4 \times 6 =$	Four 6's =
3. $6 \times 7 =$	Six 7's =	$7 \times 6 =$	Seven 6's =
4. $6 \times 2 =$	Six 2's =	$2 \times 6 =$	Two 6's =
5. $6 \times 9 =$	Six 9's =	$9 \times 6 =$	Nine 6's =
6. $6 \times 3 =$	Six 3's =	$3 \times 6 =$	Three 6's =
7. $6 \times 5 =$	Six 5's =	$5 \times 6 =$	Five 6's =
8. $6 \times 6 =$	Six 6's =	$6 \times 1 =$	Six 1's =

Carrying More Than Once in Multiplying

You have learned how to carry once. In long multiplication problems we often have to carry two or more times.

$$\begin{array}{r} 478 \\ \times 2 \\ \hline 956 \end{array}$$

1. *Think:* $2 \times 8 = 16$. Write 6 under the 8 and 2. Carry 1.
2. *Think:* $2 \times 7 = 14$. 14 and the 1 carried make 15. Write 5 before 6. Carry 1.
3. $2 \times 4 = 8$. $8 + 1$ (carried) $= 9$. Write 9 before 56. The answer is 956.

Watch the Zeros

680	$2 \times 0 = 0$	608	$2 \times 8 = 16$
$\times 2$	$2 \times 8 = 16$	$\times 2$	$2 \times 0 = 0$
1360	$2 \times 6 = 12$	1216	$0 + 1$ (carried) $= 1$
	$12 + 1$ (carried) $= 13$		$2 \times 6 = 12$
	The answer is 1,360.		The answer is 1,216.

Cover the answers with an answer sheet and multiply:

460	308	265	521	300	256	103
2	4	2	4	3	4	3
920	1232	530	2084	900	1024	309

Carrying in Multiplication

Copy and multiply:

1.	56	93	84	72	16	97	43	98
	6	6	6	6	6	6	6	6
2.	85	26	95	47	76	81	19	45
	6	6	6	6	6	6	6	6
3.	146	278	145	287	253	359	391	
	3	3	4	2	4	3	2	

Use an answer sheet:

4.	100	89	175	260	348	607	465
	6	4	5	5	5	4	2

Cover these answers with an answer sheet and multiply:

5.	241	134	382	527	631	158	921
	3	4	3	3	4	2	4
	723	536	1146	1581	2524	316	3684

Mixed Exercises in Multiplication with Carrying

Use an answer sheet:

1.	92	67	871	798	27	493	964	82
	2	6	6	2	4	5	3	6
2.	347	426	34	95	382	93	547	86
	3	2	6	5	5	3	5	2
3.	39	297	47	328	168	738	944	68
	4	5	2	5	2	6	3	4
4.	257	85	531	453	48	631	394	873
	2	3	2	6	4	6	2	4
5.	927	192	143	62	768	76	513	74
	6	3	5	3	4	5	3	3
6.	568	35	54	827	561	916	865	429
	5	2	4	3	6	5	3	6

In these examples zero is multiplied. Study the answers. Then cover them with an answer sheet and multiply.

406	720	800	306	205	250	180
7	6	4	5	2	3	6
2842	4320	3200	1530	410	750	1080
708	607	900	506	807	906	503
6	5	5	7	6	5	7
4248	3035	4500	3542	4842	4530	3521

Can You Tell How Many Rolls?

Fred's father has a bakery. Fred often rides in the bakery truck and helps the delivery man.

"Fifty-four loaves of bread go here," said the delivery man as he stopped in front of a large store. "Today I am leaving that many loaves at each of 12 stores."

"My, that is a lot of bread!" said Fred. "I think I shall ask Miss Martin how many loaves it is."

"You should figure it out yourself," said the delivery man.

"It would be 12 fifty-four's. That would be too many to add."

"It would be much easier to multiply 54 by 12," said the delivery man.

"That is right," said Fred, "but 9 is the largest number that I have learned to multiply by."

"It is easy to multiply by 12," said the delivery man.

Multiplying by a Two-Figure Number

This solution shows step by step how to multiply 12×54. Each new step is shown in red.

A

```
 54
 12
```

Write 12 under 54.

B

```
 54
 12
108
```

First multiply 54 by 2.
Write 108 so that 8 is under 4 and 2.

C

```
 54
 12
108
 4
```

Now multiply 54 by 1.

$1 \times 4 = 4$. Write 4 under the zero. Put it in the same column as the 1 by which you are multiplying.

D

```
 54
 12
108
54
```

Next $1 \times 5 = 5$. Write 5 in the first column to the left of 4.

E

```
 54
 12
108
 54
648
```

Add 108 and 54 in the columns as they stand.
12×54 is 648.

"You delivered 648 loaves because 12×54 is 648," said Fred to the delivery man.

Check these examples and see if they are correct.

36	43	35	46
15	14	16	13
180	172	210	138
36	43	35	46
540	602	560	598

Practice in Multiplying with Two Figures

Study these examples. Cover the answers with an answer sheet and work. Then uncover the answers. If you have any mistakes, find where you made them.

$$\begin{array}{r} 67 \\ \times 25 \\ \hline 335 \\ 134 \\ \hline 1675 \end{array} \qquad \begin{array}{r} 74 \\ \times 32 \\ \hline 148 \\ 222 \\ \hline 2368 \end{array}$$

Learn this new multiplication fact which you will now need for the first time.

$$\begin{array}{r} 0 \\ \times 1 \\ \hline 0 \end{array}$$

Copy and multiply:

1.	30	47	20	26	16	29	18	36
	12	16	19	18	37	36	11	46
2.	35	15	90	80	59	48	86	72
	39	48	15	24	25	35	12	19
3.	21	32	58	62	73	60	27	19
	56	61	13	21	24	14	36	53
4.	32	56	78	61	12	70	25	31
	11	13	23	15	53	13	34	52

In checking a multiplication example, first multiply the top number by the bottom one. Then change the numbers around and multiply the bottom one by the top one. The answer should be the same each time as shown on the next page.

EXAMPLE	CHECK
54 top number	27 bottom number
27 bottom number	54 top number
378	108
108	135
1458 →	1458

Copy, multiply, and check:

1.	82	27	91	56	43	91	32	46
	51	63	66	17	69	65	47	24
2.	49	62	37	65	93	78	35	87
	56	73	16	71	61	65	47	24

Mixed Review

Oral Practice. Watch the signs.

1.	$16 \div 4 =$	$6 \times 5 =$	$4 + 9 =$	$5 \times 7 =$
2.	$12 - 3 =$	$25 \div 5 =$	$3 \times 9 =$	$32 \div 4 =$
3.	$45 \div 5 =$	$12 - 9 =$	$12 \div 3 =$	$11 - 8 =$
4.	$9 + 3 =$	$4 + 5 =$	$11 - 3 =$	$5 \times 9 =$
5.	$11 - 7 =$	$20 \div 4 =$	$9 + 4 =$	$35 \div 5 =$
6.	$8 + 5 =$	$9 + 2 =$	$27 \div 3 =$	$4 + 8 =$
7.	$11 - 2 =$	$4 \times 8 =$	$5 \times 8 =$	$24 \div 4 =$
8.	$5 \times 6 =$	$28 \div 4 =$	$7 + 3 =$	$11 - 9 =$
9.	$8 + 9 =$	$12 - 7 =$	$40 \div 8 =$	$4 \times 6 =$
10.	$3 \times ? = 21$	$40 \div ? = 8$	$? + 8 = 15$	$10 - ? = 6$
11.	$15 \div 5 =$	$4 \times 7 =$	$8 + ? = 11$	$17 - 9 =$
12.	$6 \times ? = 24$	$13 - 5 =$	$18 \div 3 =$	$9 + ? = 17$
13.	$9 \times ? = 54$	$15 - 7 =$	$? + 7 = 11$	$32 \div 4 =$

Multiplying an Amount of Money

How much will 13 rabbits cost at $.25 each?

$ .25 13 75 25 $3.25	Write the cents' point in the answer under the cents' point in the example. Notice that $3.25 is the same as 325¢.	25¢ 13 75 25 325¢

Copy and multiply:

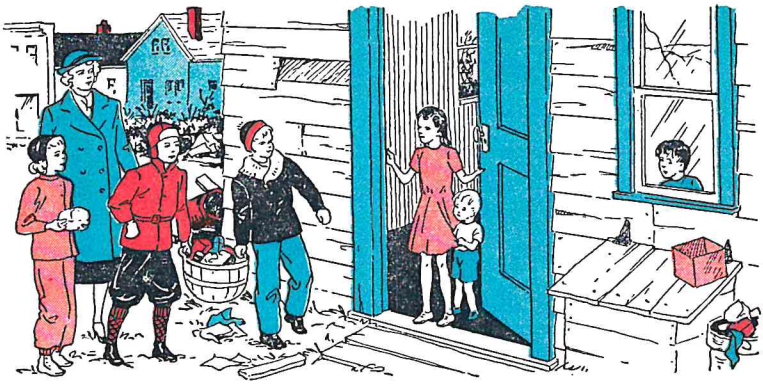
1.	$.11	$.24	$.36	$.28	$.37	$.42	$.19
	12	13	12	14	16	15	21
2.	$.15	$.14	$.12	$.16	$.15	$.13	$.17
	13	15	17	13	14	16	11
3.	$.23	$.27	$.31	$.35	$.28	$.42	$.56
	24	31	23	15	32	16	12

Obeying the Signs

Do what the signs say. Use an answer sheet.

1.	9	9	5	9	6	8	6	5
	+5	+7	+8	+8	+7	+6	+9	+7
2.	11	12	17	15	13	13	16	15
	−6	−7	−9	−7	−8	−5	−9	−8
3.	8	11	9	17	7	13	6	14
	+9	−4	+6	−8	+9	−6	+6	−5

Delivering Groceries to Needy Families



1. The boys and girls of the fourth grade gave Christmas baskets to three families. Thirteen of the children each brought $.50 to pay for chickens to put in the baskets. How much did the chickens cost?

2. They put a box of candy in each basket. Each box cost $.15. How much did they spend for candy to go in the 3 baskets?

3. They bought 24 cans of vegetables for the baskets. Each can cost $.17. How much did they spend for vegetables?

4. The entire school furnished 18 baskets. If there were $.45 worth of potatoes in each basket, what did all of the potatoes cost?

5. They put a dozen oranges in each of the baskets. How many oranges did it take for all of the baskets? (See Prob. 4.)

6. The owner of the store near the school gave $.25

worth of apples for each of the 18 baskets. How much were the apples worth that he gave?

7. Each child in school brought $.25 to pay for his share of the baskets. If there are 27 children in the fourth grade, how much money did they bring?

8. There are 33 children in the fifth grade. How much did this grade furnish if each brought $.25?

Multiplying Numbers That End in Zeros

It is very easy to multiply 10 by any number. The answer is always the number with a zero written at its right. It is easy to multiply 100 or 1000 by any number.

$$\begin{array}{r} 10 \\ \times 8 \\ \hline 80 \end{array} \qquad \begin{array}{r} 100 \\ \times 8 \\ \hline 800 \end{array} \qquad \begin{array}{r} 1000 \\ \times 8 \\ \hline 8000 \end{array}$$

$8 \times 10 = 80$ or 8 with a zero written at its right.

$8 \times 100 = 800$ or 8 with 2 zeros written at its right.

$8 \times 1000 = 8000$ or 8 with 3 zeros written at its right.

Multiply orally:

1.	10	10	10	10	10	10	10	10
	7	5	4	6	8	2	9	3

When you multiply 10 by a number, the answer is the number with a zero written at its right.

2.	100	100	100	100	100	100	100
	5	7	2	6	4	9	3

When you multiply 100 by a number, the answer is the number with 2 zeros written at its right.

3.

1000	1000	1000	1000	1000	1000
3	9	6	4	7	5

When you multiply 1000 by a number, the answer is the number with 3 zeros written at its right.

4.

100	1000	1000
8	2	8

Jane Goes Christmas Shopping

1. For the 6 weeks before Christmas Jane saved $.25 a week of her allowance. How much did she save in 6 weeks?

2. Her mother paid her $.15 a week for doing extra work for 3 weeks. How much did she earn?

3. Jane started out to do her Christmas shopping. She had a dollar bill and a half dollar that Father had given her. She also had the $1.95 that she had saved and earned. How much did she have in her purse?

4. Jane bought Mother two handkerchiefs for $.66. How much did each handkerchief cost if each cost the same?

5. She bought Jimmie a saw, a hammer, and a screw driver for his tool chest. Each tool cost $.27. How much did the three cost?

6. Jane spent $1.08 for a leather book cover for Father. How much did the presents for Father, Mother, and Jimmie cost her? (See Prob. 4 and 5.)

7. How much money did Jane have left if she had $3.45 and spent $2.55 for presents?

8. She decided to divide the $.90 into 3 equal parts to buy gifts for Edna, Alice, and Mary. How much could she spend for each gift?

Using Seven in Multiplying

We know that:

2 sevens = 14	7 twos = 14
3 sevens = ?	7 threes = 21
4 sevens = 28	7 fours = ?
5 sevens = ?	7 fives = 35
6 sevens = 42	7 sixes = ?

What are 7 sevens?

Can we find 7 sevens by adding 7 + 7 + 7 + 7 + 7 + 7 + 7?

If we know 6 sevens = 42, can we find 7 sevens by adding 1 seven to 42? Do 7 sevens = 49?

If we know 7 sevens = 49, can we find 8 sevens by adding 1 seven to 49? Do 8 sevens = 56?

Practice in Multiplying by Seven

Make practice cards for these new multiplication facts. Study each fact carefully.

7	7	9	7	8
7	9	7	8	7
49	63	63	56	56

Give the answers orally:

1.	$7 \times 8 =$	Seven 8's =	$8 \times 7 =$	Eight 7's =
2.	$7 \times 4 =$	Seven 4's =	$4 \times 7 =$	Four 7's =
3.	$7 \times 6 =$	Seven 6's =	$6 \times 7 =$	Six 7's =
4.	$7 \times 2 =$	Seven 2's =	$2 \times 7 =$	Two 7's =
5.	$7 \times 9 =$	Seven 9's =	$9 \times 7 =$	Nine 7's =
6.	$7 \times 3 =$	Seven 3's =	$3 \times 7 =$	Three 7's =
7.	$7 \times 5 =$	Seven 5's =	$5 \times 7 =$	Five 7's =
8.	$7 \times 7 =$	Seven 7's =	$7 \times 1 =$	Seven 1's =

Copy and multiply:

9.	54	27	38	96	14	25	78	36
	7	7	7	7	7	7	7	7
10.	49	61	32	58	73	48	85	62
	7	7	7	7	7	7	7	7

Use an answer sheet in multiplying:

11.	75	83	26	84	76	29	57	53
	7	7	7	7	7	7	7	7
12.	120	141	106	114	102	109	113	180
	7	7	7	7	7	7	7	7

Carrying Twice in Multiplying with Large Numbers

```
      165
     ×24
     660
    330
    3960
```

Think: $4 \times 5 = 20$. Write 0 under 4, carry 2.
Think: $4 \times 6 = 24$. $24 + 2$ (carried) $= 26$. Write 6 under 2, carry 2.
Think: $4 \times 1 = 4$. $4 + 2$ (carried) $= 6$. Write 6 under 1.
Think: $2 \times 5 = 10$. Write 0 under 6, carry 1.
Think: $2 \times 6 = 12$. $12 + 1$ (carried) $= 13$. Write 3 under 1 and 6, carry 1.
Think: $2 \times 1 = 2$. $2 + 1$ (carried) $= 3$. Write 3 next to 3.
Now add. The answer is 3,960.

Study these examples. Then cover the answers with an answer sheet and multiply.

246	124	189	258	343
13	35	23	23	14
738	620	567	774	1372
246	372	378	516	343
3198	4340	4347	5934	4802

Copy these examples and multiply:

1.	157	165	198	169	139	123	134
	13	12	15	12	14	16	23
2.	178	186	245	113	162	188	224
	32	42	34	28	19	26	34
3.	286	279	347	317	415	346	369
	12	23	24	16	18	23	24

Multiplication Review

Use an answer sheet and multiply:

1.	78	43	67	58	21	76	59	78
	25	27	19	63	48	76	47	35
2.	94	82	65	23	45	34	23	17
	65	17	52	39	91	48	59	85
3.	28	43	57	19	96	67	31	47
	62	93	38	27	13	84	36	57
4.	75	45	69	94	57	83	79	73
	23	25	46	23	47	54	56	35
5.	82	73	93	53	63	92	59	67
	56	47	25	63	58	63	45	34

Answer orally:

1.	$8 \times 2 =$	$8 \times 4 =$	$4 \times 8 =$	$9 \times 2 =$
2.	$3 \times 5 =$	$5 \times 9 =$	$8 \times 7 =$	$2 \times 5 =$
3.	$5 \times 6 =$	$9 \times 6 =$	$3 \times 9 =$	$6 \times 2 =$
4.	$6 \times 3 =$	$5 \times 5 =$	$7 \times 6 =$	$3 \times 6 =$
5.	$2 \times 7 =$	$3 \times 4 =$	$5 \times 2 =$	$4 \times 5 =$
6.	$7 \times 9 =$	$7 \times 3 =$	$9 \times 5 =$	$8 \times 6 =$
7.	$4 \times 6 =$	$9 \times 7 =$	$7 \times 8 =$	$7 \times 4 =$
8.	$6 \times 8 =$	$8 \times 5 =$	$5 \times 8 =$	$9 \times 3 =$
9.	$9 \times 4 =$	$4 \times 9 =$	$8 \times 3 =$	$5 \times 4 =$
10.	$4 \times 7 =$	$5 \times 7 =$	$6 \times 7 =$	$7 \times 7 =$

11. Each answer in Ex. 10 grows larger by —. Can you tell why?

A Christmas Program at School

1. On the day before school closed for the Christmas holidays, all the pupils in Jimmie's and Jane's school came into the auditorium for a Christmas program. There were seven grades in this school. Each grade had two sections. How many sections were there in the school?

2. Each of the 14 sections spent 5 minutes in putting on its part of the program. For how many minutes did the program continue?

3. Each of the 14 sections spent $.75 in putting on the program. How much was spent in all?

4. There were 28 rows of seats in the auditorium. Each row had 16 seats in it. There was a pupil in every seat. How many children were there in the auditorium?

5. The first, second, and third grades were seated in the first 12 rows from the front. How many children were in these grades if every seat had a pupil in it? (See Prob. 4.)

6. The fourth, fifth, sixth, and seventh grades filled all the seats in the other 16 rows. How many pupils were in these grades? (16 seats in a row.)

7. Each of the 14 sections used 12 pupils in its program. How many pupils were in all of the short programs?

8. Eleven of the sections gave programs about Christmas. How many pupils were in Christmas programs? (See Prob. 7.)

9. In this school a collection is taken up each Christmas for the needy. As the pupils came into the auditorium, some of them put coins in the collection box for the needy. No pupil could put more than one coin in the box. There were 25 quarters in the box. How much money was this? ($25 \times \$.25$)

10. There were 127 dimes. How much money was this? ($127 \times \$.10 = \$12.70$ the answer.)

11. There were 251 nickels. How much money was this? ($251 \times \$.05 = \$12.55$ the answer.)

12. How much money was put in the box? (Add the answers to Prob. 9, 10, and 11.)

13. The principal and teachers then put in enough money to make $50. How much did they put in the box? (See Prob. 12.)

14. If $2 were spent for each family, for how many needy families did the $50 provide?

15. If $3 had been spent for each of 15 families, how much would have been spent?

16. How much of the $50 would be left?

17. How much would $4 for each of 12 families be?

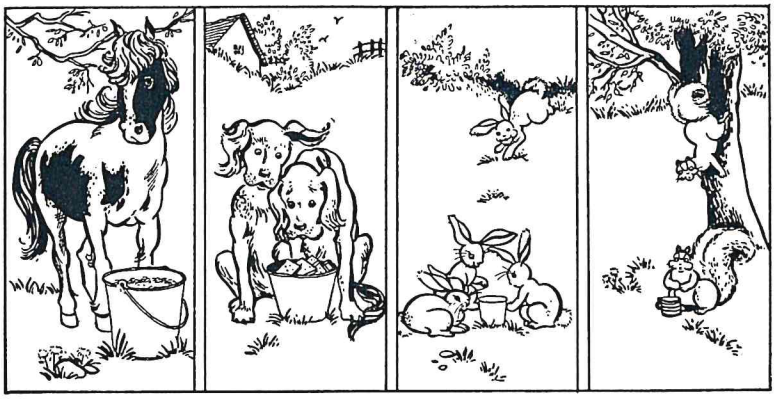
Number Facts That Need More Study

This page is made up of those addition, subtraction, and multiplication facts that you have studied but which often need more study. You must know them well.

Give the answers quickly:

1. $5 + 9 =$	$15 - 6 =$	$6 \times 9 =$
2. $7 + 9 =$	$15 - 8 =$	$7 \times 8 =$
3. $8 + 7 =$	$13 - 8 =$	$7 \times 6 =$
4. $5 + 8 =$	$13 - 4 =$	$8 \times 6 =$
5. $8 + 9 =$	$14 - 8 =$	$4 \times 8 =$
6. $9 + 7 =$	$17 - 8 =$	$4 \times 9 =$
7. $7 + 8 =$	$15 - 7 =$	$7 \times 9 =$
8. $8 + 5 =$	$16 - 9 =$	$7 \times 7 =$
9. $4 + 9 =$	$13 - 9 =$	$6 \times 7 =$
10. $6 + 8 =$	$14 - 6 =$	$4 \times 7 =$
11. $9 + 5 =$	$16 - 7 =$	$7 \times 5 =$
12. $9 + 8 =$	$14 - 5 =$	$5 \times 9 =$
13. $4 + 6 =$	$14 - 9 =$	$9 \times 7 =$
14. $7 + 5 =$	$17 - 9 =$	$8 \times 5 =$
15. $6 + 7 =$	$13 - 5 =$	$9 \times 6 =$
16. $9 + 4 =$	$9 - 6 =$	$3 \times 9 =$
17. $4 + 8 =$	$8 - 3 =$	$8 \times 7 =$
18. $8 + 6 =$	$11 - 8 =$	$6 \times 8 =$
19. $7 + 6 =$	$9 - 5 =$	$6 \times 6 =$
20. $3 + 5 =$	$11 - 7 =$	$9 \times 4 =$
21. $3 + 6 =$	$12 - 3 =$	$5 \times 8 =$
22. $6 + 9 =$	$18 - 9 =$	$3 \times 8 =$
23. $7 + 7 =$	$10 - 6 =$	$5 \times 7 =$

How Much Do Pets Eat?



1. William's pony drinks a gallon of water each time he is watered. How many quarts of water does he drink at one time?

2. David's dogs eat a quart of dog biscuits each time they are fed. How many pints of dog biscuits do they eat?

3. Lucy's rabbits eat a pint of oats every day. How many pints of oats do they eat in 6 days?

4. Mary's pet squirrels eat a cup of nuts each day. How many cups do they eat in 8 days?

5. How many quarts of oats do Lucy's rabbits eat in 6 days? (See Prob. 3)

6. William gives his pony water three times a day. How many gallons of water does the pony drink in a day? (See Prob. 1.)

7. How many gallons of water will he drink in a week? (See Prob. 6.)

8. How many pints are there in 9 quarts?

Practice in Dividing

Copy, divide, and check:

1. $2\overline{)17}$ $3\overline{)19}$ $2\overline{)13}$ $3\overline{)16}$ $2\overline{)15}$ $3\overline{)13}$

2. $4\overline{)17}$ $2\overline{)9}$ $3\overline{)11}$ $5\overline{)17}$ $4\overline{)19}$ $5\overline{)23}$

3. $5\overline{)85}$ $3\overline{)93}$ $4\overline{)84}$ $5\overline{)475}$ $4\overline{)168}$ $3\overline{)69}$

4. $4\overline{)35}$ $5\overline{)39}$ $3\overline{)28}$ $4\overline{)376}$ $3\overline{)258}$ $5\overline{)48}$

5. $5\overline{)43}$ $4\overline{)37}$ $4\overline{)20}$ $4\overline{)384}$ $2\overline{)198}$ $3\overline{)168}$

6. $87 \div 5$ $34 \div 4$ $47 \div 5$ $12 \div 5$ $9 \div 4$

7. $48 \div 4$ $144 \div 4$ $225 \div 5$ $85 \div 4$ $46 \div 5$

8. $4\overline{)87}$ $5\overline{)55}$ $3\overline{)95}$ $9\overline{)45}$ $4\overline{)164}$

9. $7\overline{)294}$ $5\overline{)37}$ $4\overline{)352}$ $3\overline{)174}$ $5\overline{)135}$

10. $3\overline{)72}$ $4\overline{)72}$ $5\overline{)95}$ $3\overline{)22}$ $5\overline{)49}$ $5\overline{)42}$

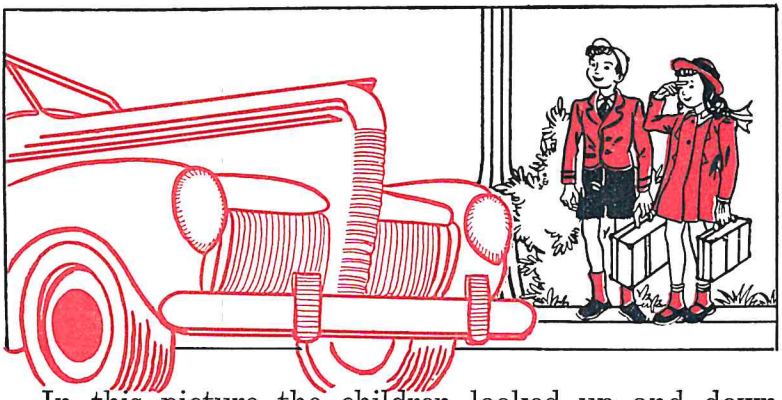
11. $4\overline{)372}$ $3\overline{)25}$ $4\overline{)57}$ $5\overline{)145}$ $3\overline{)123}$ $5\overline{)40}$

12. $5\overline{)29}$ $4\overline{)26}$ $3\overline{)27}$ $4\overline{)39}$ $4\overline{)38}$ $2\overline{)19}$

13. $5\overline{)70}$ $5\overline{)71}$ $5\overline{)72}$ $5\overline{)73}$ $5\overline{)74}$

14. Each of the answers in Ex. 13 has the number — in it.

Watch for the Second Question



In this picture the children looked up and down the street to see if they could cross it safely. Then they saw that a car was about to turn in front of them. They waited for it to pass. They needed to look twice to cross the street safely.

So it is with arithmetic problems. Some problems ask one question, others ask two questions. Watch the problems that have two questions.

1. The children in the picture have 40 marbles altogether in the bags they are carrying. Thirteen are red, 9 are blue, and 7 are black. The rest are white. How many red, blue, and black marbles do they have? How many white marbles do they have?

> Notice that this problem asks two questions.
>
> To answer the first question, "How many red, blue, and black marbles do they have?", you must add $13 + 9 + 7 = 29$.

To answer the second question, "How many white marbles do they have?", you must subtract the number of other marbles from the total number 40. 40 − 29 = 11.

See if you can answer both questions in each problem:

2. There were 36 tree ornaments in a box of decorations. Fifteen were red, 7 were blue, and 5 were gold. The rest were silver. How many red, blue, and gold ornaments were there? How many silver ornaments were there?

15 + 7 + 5 = 27 27 were red, blue, and gold 36 − 27 = — — were silver	15 7 5 27 36 −27 ?

3. How many ornaments were red and blue? How many were blue and gold? (See Prob. 2.)

4. Jimmie had $.50 to spend for gifts for three of his friends. He spent $.20 for a book for Joe. How much did he have left? How much could he spend for each of the other two boys, if he spent the same amount for each gift?

5. Mother filled 6 boxes with cookies and candy. She had 65 cookies. She put 9 cookies in each box. How many cookies did she use? How many were left?

6. Alice received $2.00 for Christmas. She bought 3 books that cost $.35 each. How much did the books cost? How much did she have left?

Multiplying by Ten and One Hundred

If 10 boys each have 15 marbles, how many marbles do they have in all?

$10 \times 15 = 150$

They have 150 marbles

$$\begin{array}{r} 15 \\ \times 10 \\ \hline 00 \\ 15 \\ \hline 150 \end{array}$$

Here is a shorter way to do this example.

$$\begin{array}{r} 15 \\ \times 10 \\ \hline 150 \end{array}$$

1. Set the zero in 10 to the right of the number that you are multiplying.
2. Bring the zero down as part of the answer and multiply by 1.

Study these multiplication facts using 0:

0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Cover the answers with an answer sheet and multiply:

1.	**2.**	**3.**	**4.**
25	60	20	45
10	10	10	10
250	600	200	450
5.	**6.**	**7.**	**8.**
15	60	20	45
100	100	100	100
1500	6000	2000	4500

Practice in Multiplying by Numbers That End in Zero

Copy and multiply:

1.	10	23	54	67	98	45	37
	10	10	100	10	10	20	300
2.	67	40	80	46	57	51	38
	30	20	50	20	80	40	200
3.	67	89	20	47	38	29	59
	70	60	30	50	40	60	100
4.	90	60	49	27	59	89	48
	60	70	30	10	40	400	700
5.	400	200	100	50	40		
	10	20	40	80	100		
6.	400	700	800	600	900		
	30	50	40	60	60		

Abbreviations

doz. stands for dozen.	12 things = 1 doz.
gal. stands for gallon or gallons.	4 quarts = 1 gal.
qt. stands for quart or quarts.	2 pints = 1 qt.
pt. stands for pint or pints.	2 cups = 1 pt.

1. How many apples are there in $\frac{1}{2}$ doz.?
2. In 28 gal., there are — qt.
3. 16 pt. make — qt.

Practice in Dividing by Five

Copy and divide. Check each.

1.	$5\overline{)85}$	$5\overline{)60}$	$5\overline{)95}$	$5\overline{)83}$	$5\overline{)57}$	$5\overline{)72}$
2.	$5\overline{)56}$	$5\overline{)65}$	$5\overline{)84}$	$5\overline{)92}$	$5\overline{)76}$	$5\overline{)375}$
3.	$5\overline{)67}$	$5\overline{)89}$	$5\overline{)74}$	$5\overline{)87}$	$5\overline{)73}$	$5\overline{)58}$
4.	$5\overline{)62}$	$5\overline{)55}$	$5\overline{)66}$	$5\overline{)474}$	$5\overline{)78}$	$5\overline{)94}$
5.	$5\overline{)81}$	$5\overline{)125}$	$5\overline{)59}$	$5\overline{)380}$	$5\overline{)83}$	$5\overline{)79}$

6. George has 190 pennies which he wants to trade for nickels. How many nickels can he get for them?

7. Helen and Betty made 135 pieces of caramel candy to sell. They put it into sacks with 5 pieces in each sack. How many sacks could they sell?

8. June has 105 small beads which she is going to string. She is going to put them in groups of 5 with a large bead for every 5 small ones. How many such groups will she have?

9. It took Jimmie 5 minutes to bring in a load of wood and pile it in the basement. At that rate how many loads of wood can he bring in an hour? (60 minutes in an hour.)

10. Harold's family uses a pound of butter every 5 days. At that rate how many pounds of butter will be used in 365 days?

11. How many 5-cent stamps can you buy with 150 pennies?

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Use a calendar to find days of the month.
2. Carry twice in multiplying.
3. Multiply numbers by 6 and 7.
4. Use the new multiplication facts given in this chapter.
5. Multiply numbers with zero in them by other numbers.
6. Multiply numbers by other numbers that have zero in them.
7. Multiply large numbers by two-figure numbers.
8. Solve problems that ask two questions.
9. Tell the meaning of doz., pt., qt., and gal.

Are You Ready for the Next Chapter?

1. Can you do tests 9, 10, 11, and 12 without making errors? If so, you may omit the Remedial Practice (Sets 9-12) and study pages 275-277 in Chapter 9.

2. If you make errors on the tests, study the examples you do not know on the pages shown in **heavy type.**

3. Write the answers to tests 11 and 12 on answer sheets.

Diagnostic Test No. 9: Multiplication **99**

1.	70	16	37	67	77	44	75
	96	76	74	91	60	13	52

Copy and multiply:

2.	62	70	64	86	76	64	52
	87	37	56	72	20	46	64
3.	74	16	80	79	38	45	45
	57	67	65	77	54	78	21

Diagnostic Test No. 10: Multiplication **100**

1.	81	91	90	700	600	600	511	500
	6	7	6	7	7	6	7	6
2.	891	760	670	891	400	400	123	
	7	6	7	6	7	6	7	
3.	26	85	36	56	94	54	80	
	61	77	64	63	60	48	54	
4.	189	99	187	176	186	89	66	
	67	35	44	77	66	57	49	
5.	170	196	67	50	186	157		
	7	10	100	100	76	29		
6.	15	44	56	13	75	92	75	
	40	59	55	54	59	45	43	

Diagnostic Test No. 11: Addition **101**

1.	**2.**	**3.**	**4.**	**5.**
889	991	778	709	900
786	872	886	900	88
457	776	989	876	789

6.	7.	8.	9.	10.
789	384	989	99	875
68	97	786	88	9
490	869	675	64	468

Diagnostic Test No. 12: Subtraction 101

1.	687	496	3866	9781	1050	897
	599	298	2975	8892	849	654
2.	964	315	450	686	3540	3097
	354	218	184	380	2692	1875

Remedial Practice in Multiplying (Set 9)

1.	70	16	37	67	77	44	75
	96	76	74	91	60	13	52
	420	96	148	67	4620	132	150
	630	112	259	603		44	375
	6720	1216	2738	6097		572	3900
2.	62	70	64	86	76	64	52
	87	37	56	72	20	46	64
	434	490	384	172	1520	384	208
	496	210	320	602		256	312
	5394	2590	3584	6192		2944	3328
3.	74	16	80	79	38	45	45
	57	67	65	77	54	78	21
	518	112	400	553	152	360	45
	370	96	480	553	190	315	90
	4218	1072	5200	6083	2052	3510	945

Remedial Practice in Multiplying (Set 10)

1.

```
  81
   6
 ---
 486
```

$6 \times 1 = 6$. Write 6 under 1 and 6.
$6 \times 8 = 48$. Write 48 to the left of 6.

2.

```
  891
    7
 ----
 6237
```

$7 \times 1 = 7$. Write 7 under 1 and 7.
$7 \times 9 = 63$. Write 3 to the left of 7, carry 6.
$7 \times 8 = 56$. $56 + 6$ (carried) $= 62$.
Write 62 to the left of 37.

3.

```
   26
   61
  ---
   26
  156
  ----
 1586
```

$1 \times 6 = 6$. Write 6. $1 \times 2 = 2$. Write 2.
$6 \times 6 = 36$. Write 6 under 2, carry 3.
$6 \times 2 = 12$. $12 + 3$ (carried) $= 15$.
Write 15.
Add: Bring down 6. $2 + 6 = 8$. Write 8.
Bring down 15.

4.

```
   189
    67
  ----
  1323
 1134
 -----
 12663
```

$7 \times 9 = 63$. Write 3, carry 6.
$7 \times 8 = 56$. $56 + 6$ (carried) $= 62$.
Write 2, carry 6.
$7 \times 1 = 7$. $7 + 6$ (carried) $= 13$.
Write 13.
$6 \times 9 = 54$. Write 4 under 2, carry 5.
$6 \times 8 = 48$. $48 + 5$ (carried) $= 53$.
Write 3, carry 5.
$6 \times 1 = 6$. $6 + 5$ (carried) $= 11$. Write 11.
Add: Bring down 3. $2 + 4 = 6$. Write 6.
$3 + 3 = 6$. Write 6. $1 + 1 = 2$. Write 2.
Bring down 1.

5.

```
  170
    7
 ----
 1190
```

$7 \times 0 = 0$. Write 0.
$7 \times 7 = 49$. Write 9, carry 4.
$7 \times 1 = 7$. $7 + 4 = 11$. Write 11.

6. 15 Bring down 0. $4 \times 5 = 20$.
40 Write 0, carry 2.
600 $4 \times 1 = 4$. $4 + 2$ (carried) $= 6$. Write 6.
44 $9 \times 4 = 36$. Write 6, carry 3.
59 $9 \times 4 = 36$. $36 + 3$ (carried) $= 39$.
396 Write 39.
220 $5 \times 4 = 20$. Write 0 under 9, carry 2.
2596 $5 \times 4 = 20$. $20 + 2 = 22$. Write 22.
Add: Bring down 6. $9 + 0 = 9$. Write 9.
$3 + 2 = 5$. Write 5. Bring down 2.

REMEDIAL PRACTICE IN ADDING (SET 11)

1. 889 Ones' Column { Think $9 + 6 = 15$. $15 + 7 = 22$. Write 2, carry 2.
786
457 Tens' Column { Think 2 (carried) $+ 8 = 10$. $10 + 8 = 18$. $18 + 5 = 23$. Write 3, carry 2.
2132
Hundreds' Column { Think 2 (carried) $+ 8 = 10$. $10 + 7 = 17$. $17 + 4 = 21$. Write 21.

REMEDIAL PRACTICE IN SUBTRACTING (SET 12)

1. 687 You cannot take 9 from 7, so
599 Borrow 1 from 8 and leave 7.
88 Think $17 - 9$ and write 8.
Borrow 1 from 6 and leave 5.
Think $17 - 9$ and write 8.
Think $5 - 5 = 0$. Write nothing.

IMPROVEMENT TEST NO. 3

1. George worked 12 days in a grocery store. He received \$.75 a day. How much did he get in all?

2. At $.75 a day, how much did George earn in 6 days?

3. One day he delivered 60 boxes of groceries in 4 hours. How many boxes did he deliver each hour if he delivered the same number each hour?

4. John worked in the same store for 7 days during the Christmas holidays. He received $.85 a day. How much did he earn in 7 days?

5. If George earned $9.00 in 12 days, he earned how much more than John in 7 days? (See Prob. 4.)

6. At the rate of $.85 a day, how much did John earn in 4 days?

7. On the first day that George worked he sold 6 bags of potatoes at $.25 per bag. How much did he get for the potatoes?

8. On John's first day he sold 10 pieces of candy at 5¢ each. How much did he get for the candy?

9. How much did George and John get for the potatoes and candy together? (Add the answers to Prob. 7 and 8.)

10. How many 5¢ pieces of candy can John sell for 85¢?

Were you in the hard-workers' group in this chapter?

Scores

Hard-workers

0 1 2 3 4 5 6 7 8 9 10

CHAPTER 4

USING DIVISION

Shopping at the Variety Store

"I like to shop at the Variety Store," said Jane.

"Why do you like to shop there?" asked Mother.

"Because there are so many things there that I would like to have," answered Jane. "The prices are low enough that I can buy some of the things if I want them."

"The prices there are from one penny to ninety-nine cents," said Mother.

"I spend from a dime to a quarter for most of the gifts I buy," said Jane. "There are many things there from which to choose."

"It pleases me very much that you know the prices

of articles," said Mother. "To know how much you should get for the money you spend is important."

1. Name five articles that cost a nickel each.
2. Name five articles that cost a dime each.

Here are the prices of a few things in the Variety Store. Study these problems and give the answers.

1. Paper clips are 8¢ a box. How much will 4 boxes of clips cost?
2. Large tablets are 9¢ each. How much will 4 tablets cost?
3. Drawing paper is 5¢ a package. How much will 7 packages of it cost?
4. How much will 8 pencils cost at 5¢ each?
5. Red paper for making posters costs 6¢ for a small package. How much will 4 packages cost?
6. Larger packages of poster paper cost 9¢ each. How much will 3 of the larger packages cost?
7. George had 6 nickels when he went to the Variety Store. How much money did he have? What did you do to find out how much money he had?
8. How much will 9 small packages of crayons cost at 4¢ a package?
9. How much will 5 toys cost at 8¢ each? How much will 3 toys cost at the same price?
10. How much will 7 tin soldiers cost at 4¢ each? How much will 4 soldiers cost at the same price?
11. A man at the Variety Store gave the clerk a half dollar for a ball that cost 5¢. The clerk gave him 9 nickels in change. How much did she give him?

Dividing Large Numbers

Jimmie has 40 marbles that he wishes to divide equally with Jane. How many marbles will each of them have then?

Since Jimmie wishes to divide the marbles equally between two people (Jane and himself), he should divide 40 by 2.

20	*Question:* How many 2's are there in 40?
2)40	Complete the first steps. Divide, multiply, subtract, and bring down.
4	
0	
0	Ready to divide again 2's in 0 = 0
	Write 0 in the answer after 2.
	Multiply $0 \times 2 = 0$
	Subtract $0 - 0 = 0$
	Answer: The number of 2's in 40 = 20

Since 40 divided by 2 is 20, each will have 20 marbles.

Study these new division facts:

0	0	0	0	0	0	0	0	0
1)0	2)0	3)0	4)0	5)0	6)0	7)0	8)0	9)0
1	2	3	4	5	6	7	8	9
1)1	1)2	1)3	1)4	1)5	1)6	1)7	1)8	1)9

Copy and divide:

1. 2)20 2)60 3)60 3)90 2)80 2)40

2. $2\overline{)100}$ $3\overline{)150}$ $2\overline{)120}$ $2\overline{)140}$ $3\overline{)180}$ $2\overline{)160}$

3. $2\overline{)180}$ $3\overline{)210}$ $3\overline{)120}$ $3\overline{)270}$ $3\overline{)240}$ $3\overline{)30}$

Can you answer these questions?

4.

$$\begin{array}{r} 0 \\ \times 2 \\ \hline ? \end{array} \qquad \begin{array}{r} ? \\ 2\overline{)0} \end{array} \qquad \begin{array}{r} 1 \\ \times 6 \\ \hline ? \end{array} \qquad \begin{array}{r} ? \\ 1\overline{)6} \end{array} \qquad \begin{array}{r} 0 \\ \times 3 \\ \hline ? \end{array} \qquad \begin{array}{r} ? \\ 3\overline{)0} \end{array}$$

More Questions on How We Divide

Study these examples and answer the questions about them orally:

A	B	C	D
$\begin{array}{r} 12 \\ 2\overline{)24} \\ \underline{2} \\ 4 \\ \underline{4} \end{array}$	$\begin{array}{r} 18 \\ 2\overline{)36} \\ \underline{2} \\ 16 \\ \underline{16} \end{array}$	$\begin{array}{r} 23 \\ 2\overline{)47} \\ \underline{4} \\ 7 \\ \underline{6} \\ 1 \end{array}$	$\begin{array}{r} 29 \\ 2\overline{)59} \\ \underline{4} \\ 19 \\ \underline{18} \\ 1 \end{array}$

1. Where do we get the 1 in the answer of Ex. A?

2. Notice that we do not write zero below the line when we subtract 2 from 2 in Ex. A.

3. How do we get the 1 in the upper 16 in Ex. B?

4. Where do we get the lower 16 in Ex. B?

5. In Ex. C, how many 2's are there in 47?

6. Where does the 1 in Ex. C come from?

7. What is this 1 called?

8. After we have divided 2 into 5 in Ex. D, why do we say 2 into 19?

Study these examples and the checks. Answer the questions about them.

A	B	C	D	E
21	28	20	32	15
3)63	3)84	3)60	3)97	3)47
6	6	6	9	3
3	24	0	7	17
3	24	0	6	15
			1	2

Checks:

21	28	20	32	15
×3	×3	×3	×3	×3
63	84	60	96	45
			+1	+2
			97	47

1. How does the check show that Ex. A is solved correctly?
2. In Ex. B, why should the answer to the check be 84?
3. How do we know that there are 3 twenties in 60?
4. Why must we add 1 when we check Ex. D?
5. How many 15's are there in 45?
6. Why must we add 2 to 45 to check Ex. E?
7. What is the 2 in Ex. E called?

Copy and divide. Check each.

8.	2)40	3)60	4)78	5)50	4)73
9.	3)90	4)40	5)56	2)28	5)70

Dividing Two-Figure Numbers

Copy and divide. Check each.

1.	$2\overline{)26}$	$2\overline{)48}$	$2\overline{)60}$	$2\overline{)84}$	$2\overline{)87}$	$2\overline{)62}$
2.	$3\overline{)35}$	$3\overline{)93}$	$3\overline{)59}$	$3\overline{)39}$	$3\overline{)63}$	$3\overline{)96}$
3.	$4\overline{)48}$	$4\overline{)84}$	$4\overline{)88}$	$4\overline{)44}$	$5\overline{)55}$	$5\overline{)50}$
4.	$2\overline{)34}$	$5\overline{)65}$	$3\overline{)84}$	$2\overline{)92}$	$4\overline{)71}$	$5\overline{)75}$
5.	$3\overline{)51}$	$2\overline{)53}$	$4\overline{)72}$	$3\overline{)45}$	$2\overline{)76}$	$4\overline{)92}$
6.	$5\overline{)95}$	$3\overline{)78}$	$2\overline{)73}$	$4\overline{)56}$	$5\overline{)85}$	$2\overline{)54}$
7.	$4\overline{)52}$	$2\overline{)43}$	$3\overline{)89}$	$3\overline{)54}$	$5\overline{)80}$	$2\overline{)32}$
8.	$5\overline{)60}$	$2\overline{)22}$	$2\overline{)82}$	$4\overline{)64}$	$3\overline{)30}$	$2\overline{)94}$
9.	$3\overline{)99}$	$2\overline{)30}$	$2\overline{)88}$	$3\overline{)90}$	$4\overline{)80}$	$3\overline{)34}$
10.	$4\overline{)96}$	$5\overline{)90}$	$2\overline{)96}$	$2\overline{)63}$	$2\overline{)46}$	$3\overline{)57}$
11.	$2\overline{)80}$	$2\overline{)83}$	$3\overline{)60}$	$3\overline{)79}$	$4\overline{)60}$	$4\overline{)63}$
12.	$2\overline{)74}$	$2\overline{)77}$	$5\overline{)70}$	$5\overline{)72}$	$5\overline{)91}$	$2\overline{)89}$
13.	$2\overline{)36}$	$3\overline{)36}$	$4\overline{)36}$			

Look at the answers to Ex. 13:

14. When 36 is divided into 2 equal parts, each part is —.

15. When 36 is divided into 3 equal parts, each part is —.

16. When 36 is divided into 4 equal parts, each part is —.

17. When 24 is divided into 2 equal parts, each part is —.

Buying Things for New Dresses

Mother was making Jane some new clothes. She sent Jane to the Variety Store to buy some things that she needed to finish them.

1. Jane needed 16 square wooden buttons. She found that they came 4 on a card. How many cards must she buy?

2. Jane paid $.68 for the 4 cards. How much did each card cost?

3. She needed 3 small silver buckles with which to trim the dress. She found that a card holding the 3 buckles cost $.36. How much did each of the buckles cost?

4. Mother needed 4 large buttons for the coat she was making for Jane. How much did each button cost if she paid $.40 for 4?

5. Mother planned to knit a sweater for Jane. She told Jane to buy 3 packages of bright blue yarn. It cost 99¢ in all. How much did each package cost?

The New Apartment

Jane's Aunt Mary has just had her house made into two apartments. She plans to live in one and rent the other one furnished. Jane went with Aunt Mary to the Variety Store to help her buy things for the kitchen.

1. They bought 8 small tools at $.15 each. How much did these cost?

15¢ is the cost of one tool. 8 × 15¢ = 120¢. This is the cost of 8 tools. 120¢ is $1.20. $1.20 is the cost of 8 tools.	15 8 120

2. Aunt Mary bought a small frying pan for $.25, a set of pans for $.29, a large dish for $.15, a set of custard cups for $.18, a coffee pot for $.49, and a covered cooking pan for $.52. How much did these things cost her?

3. Aunt Mary gave the clerk a $5 bill. How much change did she get from these purchases? (See Prob. 2.)

4. They bought 4 covered icebox dishes. What did each one cost if all of them cost $.92?

5. How much will 6 icebox dishes cost at 23¢ each?

6. Jane noticed a sign which said, "5-piece stove set, $.85; pieces sold separately." If each piece cost the same amount, what would 1 piece cost?

7. Aunt Mary bought 3 pieces of the stove set. How much did the 3 pieces cost at 17¢ each? How much would 5 pieces cost?

8. A bright red dishpan costs 79¢. A green dishpan costs 93¢. How much less would Aunt Mary have to pay for the red dishpan?

9. At one counter each item cost $.07. Aunt Mary found 14 articles there that she needed. How much must she give the clerk?

10. They bought 6 jelly molds at $.26 each. What was the total cost?

11. If a dish holder costs $.05, what will a dozen holders cost?

12. Aunt Mary bought these things at another store:

tea kettle	$1.48
flour bin	$ .87
roaster	$1.59
frying pan	$ .98
garbage can	$1.38
kitchen stool	$3.25

What was Aunt Mary's bill at this store? How much change did she get from $10?

How Many Sixes in a Number?

We divide by 6 to find out how many 6's there are in a number.

1. If 2 sixes = 12, then the number of 6's in 12 = ?
2. If 4 sixes = 24, then the number of 6's in 24 = ?

3. 8 sixes = ?	48 ÷ 6 = 8
4. ? sixes = 30	30 ÷ 6 = ?
5. 7 sixes = ?	42 ÷ 6 = ?
6. 6 sevens = ?	42 ÷ 7 = ?
7. 6 eights = ?	48 ÷ 8 = 6
8. 3 sixes = ?	18 ÷ 6 = 3
9. ? sixes = 54	54 ÷ 6 = 9
10. 6 fives = ?	30 ÷ 5 = 6
11. 6 sixes = ?	36 ÷ 6 = 6
12. 4 sixes = ?	24 ÷ 6 = ?

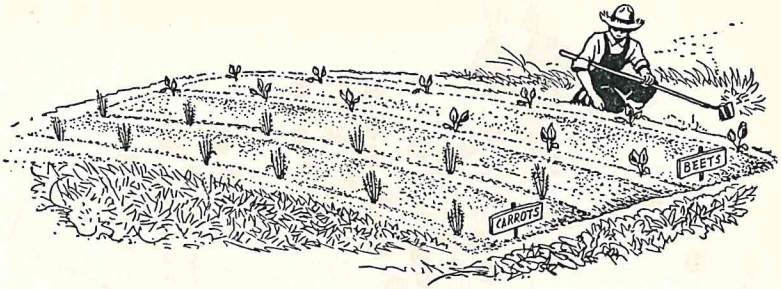
Read, giving the answers to the questions orally.

1.	Eight 6's = 48	48 ÷ 6 = ?	Six 8's = 48	48 ÷ 8 = ?
2.	Three 6's = 18	18 ÷ 6 = ?	Six 3's = 18	18 ÷ 3 = ?
3.	Nine 6's = 54	54 ÷ 6 = ?	Six 9's = 54	54 ÷ 9 = ?
4.	Two 6's = 12	12 ÷ 6 = ?	Six 2's = 12	12 ÷ 2 = ?
5.	Seven 6's = 42	42 ÷ 6 = ?	Six 7's = 42	42 ÷ 7 = ?
6.	Four 6's = 24	24 ÷ 6 = ?	Six 4's = 24	24 ÷ 4 = ?
7.	Five 6's = 30	30 ÷ 6 = ?	Six 5's = 30	30 ÷ 5 = ?

Make practice cards for these new division facts:

6	6	6	6	9	8	7
9)54	8)48	7)42	6)36	6)54	6)48	6)42

Using Six in Dividing



Answer these orally:

1. How many 6's are there in 24? $6\overline{)24}$
2. How many 4's are there in 24? $4\overline{)24}$
3. How many 6's are there in 12? $6\overline{)12}$
4. How many 6's are there in 48? $6\overline{)48}$
5. 18 divided by 6 is how much? $6\overline{)18}$
6. How many 6's are there in 36? $6\overline{)36}$
7. How many 5's are there in 30? $5\overline{)30}$
8. How much is 48 divided by 8? $8\overline{)48}$
9. How many 6's are there in 54? $6\overline{)54}$
10. How much is 42 divided by 7? $7\overline{)42}$
11. 54 divided by 9 is how much? $9\overline{)54}$

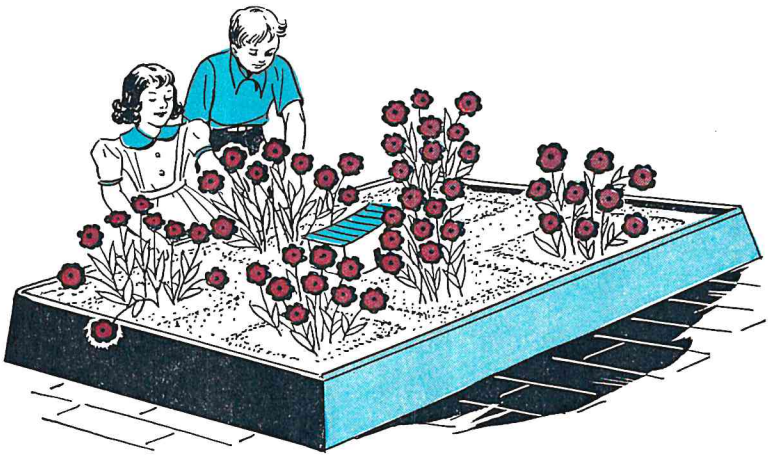
Answer these orally:

12.	$6 \times 7 =$	$42 \div 7 =$	$6 \times 2 =$	$12 \div 2 =$
13.	$6 \times 5 =$	$30 \div 5 =$	$6 \times 6 =$	$36 \div 6 =$
14.	$6 \times 8 =$	$48 \div 8 =$	$6 \times 9 =$	$54 \div 9 =$

Copy and write the answers:

15.	$48 \div 6 =$	$6 \div 6 =$	$54 \div 6 =$	$18 \div 6 =$
16.	$42 \div 7 =$	$18 \div 3 =$	$30 \div 6 =$	$24 \div 6 =$

The Chinese Garden



1. While the 36 fourth-grade pupils were studying China, Miss Martin grouped the class into 4 equal teams. How many were on each team?

2. Each team chose a project to work on. The pupils of the first team decided to make a Chinese garden. They made 54 paper flowers which they set into 6 beds in the sand box. They put the same number of flowers in each bed. How many flowers were in each bed?

3. They cut each of 7 long strips of paper into 42 pieces of the same length to make a tea house for the garden. They cut — from each strip.

4. The second team made a Chinese scrapbook. There were 36 pages in the book. If each of the 9 children on the team made the same number of pages, how many did each make?

5. They found that they needed 54 pictures for the book. If each of the 9 children made the same number of pictures, how many did each one make?

6. The 9 children decided to share equally the cost of putting a cover on the scrapbook. How much did it cost each of them if the cover cost 45¢?

7. The third team made a map showing 18 things that are made in China. How many of the things should each of the 9 children place on the map if each places the same number?

8. The fourth group of pupils made Chinese costumes. They used 8 yards of cloth which cost 48¢. How much did the cloth cost a yard?

9. They made flowers for the costumes out of tissue paper. They cut the tissue paper into strips. It took 6 strips to make a flower. How many flowers did they make from 30 strips?

10. They had 20 yards of ribbon. It took 6 yards for each costume. How many costumes were made from the 20 yards? How many yards were left over?

11. They made some paper fans to go with the costumes. It took 5 inches of paper to make each fan. How many fans could they cut from a strip of paper 15 inches long?

12. They used 5 small flat sticks for the ribs of each fan. How many fans would 42 sticks make? How many sticks would be left?

13. Four girls painted 24 roses on the fans. How many roses did each girl paint, if each painted the same number?

Review

Answer orally:

1.	$27 \div 9 =$	$15 \div 3 =$	$21 \div 3 =$	$21 \div 7 =$
2.	$18 \div 2 =$	$27 \div 3 =$	$24 \div 4 =$	$24 \div 6 =$
3.	$6 \times 4 =$	$8 \times 3 =$	$4 \times 4 =$	$5 \times 6 =$
4.	$7 \times 2 =$	$6 \times 7 =$	$8 \times 7 =$	$9 \times 3 =$
5.	$7 \times 6 =$	$4 \times 6 =$	$8 \times 2 =$	$6 \times 3 =$
6.	$4 \times 3 =$	$9 \times 5 =$	$8 \times 4 =$	$9 \times 4 =$
7.	$4 \times 9 =$	$7 \times 3 =$	$4 \times 5 =$	$9 \times 6 =$
8.	$2 \times 6 =$	$3 \times 7 =$	$6 \times 9 =$	$3 \times 9 =$
9.	$8 \times 6 =$	$9 \times 7 =$	$7 \times 9 =$	$7 \times 8 =$

Use an answer sheet:

10. *Add:*

486	589	643	889
784	476	798	767
843	897	437	493

11. *Subtract:*

4892	592	724	897
1361	480	513	685

12. *Add:*

380	377	901	522
607	822	306	809
900	500	204	100

13. *Subtract:*

837	425	3499	617
612	310	1015	306

Number Facts That Need More Study

Add:

1.	5	7	8	5	8	9	7	8	4
	9	9	7	8	9	7	8	5	9
2.	6	9	9	4	7	6	9	4	8
	8	5	8	6	5	7	4	8	6

Subtract:

1.	15	15	13	13	14	17	15	16
	6	8	8	4	8	8	7	9
2.	13	14	16	14	14	17	13	9
	9	6	7	5	9	9	5	6
3.	8	11	9	11	12	18	15	16
	3	8	5	7	3	9	9	8

Multiply:

1.	6	7	7	8	4	4	7	7	6
	9	8	6	6	8	9	9	7	7
2.	4	7	5	9	8	9	3	8	4
	7	5	9	7	5	6	9	7	6

Divide:

1.	9)54	8)24	7)42	8)16	8)32	9)36	7)21
2.	6)36	6)42	7)28	7)35	9)45	4)48	8)40
3.	6)54	9)27	6)48	6)24	6)30	4)36	5)40

Dividing the Cookies

1. In this picture Mother has just finished baking 2 dozen cookies. How many cookies did she bake?

2. She divides the cookies equally among Jane, Jimmie, and Mary. How many does she give each?

To divide the cookies into 3 equal piles is the same as dividing them into thirds. After the cookies are divided each child has one-third of them. We know that each child has 8 cookies. One-third of 24 is 8.

When Mother had finished dividing the cookies among the three children, George, Elizabeth, and Agnes came into the kitchen. So Mother took all the 24 cookies and divided them again, but this time among the 6 children. Each child now has 4 cookies, because one-sixth of 24 is 4.

Each child had 8 cookies when he had one-third of them. He had 4 cookies when he had one-sixth of them.

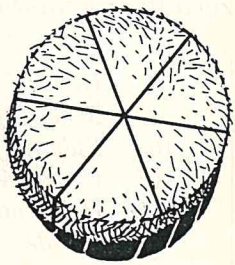
One-sixth is written $\frac{1}{6}$
To find $\frac{1}{6}$ of anything, divide it into 6 equal parts.
To find $\frac{1}{6}$ of a number, divide the number by 6.

1. Find $\frac{1}{6}$ of each of these numbers:

6 12 18 24 30 36 42 48 54

2. Into how many pieces is this cake divided?

3. What part of the cake is each piece?



4. It is 6 blocks from Ralph's home to the school. One-sixth of the distance is — block.

5. Ralph's father has a cow that gives 72 quarts of milk in 6 days. How many quarts does she give in one day?

6. One-sixth of 36 books = — books.

7. There were 240 pupils in the auditorium to see the puppet show. One-sixth of them were from the fourth-grade classes. How many fourth-grade pupils saw the show?

Dividing Large Numbers

Sometimes the number you are dividing by is larger than the first figure in the number you are dividing. This is true in this example.

	Divide	1 cannot be divided by 6; so think the number of 6's in 19 is 3.
32		
6)193	*Multiply*	$3 \times 6 = 18$.
18↓	*Subtract*	$19 - 18 = 1$.
13	*Compare*	This 1 is less than 6.
12	*Bring down*	1 cannot be divided by 6; so bring down 3 making 13.
1		
	Divide	The number of 6's in 13 is 2.
	Multiply	$2 \times 6 = 12$.
	Subtract	$13 - 12 = 1$. 1 is the remainder.
	Compare	1 is less than 6.
	The answer is 32 and 1 remainder.	

When some numbers cannot be divided you put a zero in the answer. This is true in this example.

	Divide	$16 \div 4 = 4$.
40	*Multiply*	$4 \times 4 = 16$.
4)163	*Subtract*	$16 - 16 = 0$.
16	*Compare*	0 is less than 4.
3	*Bring down*	3.
0	*Divide*	3 cannot be divided by 4. Write 0 in the answer.
3		
	Multiply	$0 \times 4 = 0$.
	Subtract	$3 - 0 = 3$. 3 is the remainder.
	Compare	3 is less than 4.
	The answer is 40 and 3 remainder.	

Copy and divide: 4)162 5)457 6)423 6)245

Dividing When Zero Is Last Figure in Answer

Copy, divide, and check:

1.	2)21	3)62	2)41	3)31	2)80	3)90
2.	4)42	5)51	4)83	5)152	4)121	5)103
3.	4)160	5)204	4)202	5)251	4)242	5)303
4.	4)282	6)361	4)360	5)401	6)422	6)543
5.	5)352	6)484	7)420	8)481	9)542	6)125
6.	6)182	8)167	9)184	6)244	8)245	6)303
7.	8)324	9)278	8)402	9)366	8)486	9)451

Dividing with Three Figures in the Answer

It is easy to divide with three figures in the answer. *Study these examples.* You see that we find the third figure exactly as we did the first two figures.

```
  240        187        256        168
2)481      4)748      3)768      5)843
  4          4          6          5
  8         34         16         34
  8         32         15         30
  1         28         18         43
  0         28         18         40
  1                                 3
```

Copy and divide:

1.	3)962	4)724	5)655	2)682	4)868	3)663
2.	4)746	5)925	4)857	3)957	2)845	3)691
3.	2)278	4)451	3)782	2)971	3)863	5)987

Dividing More Three-Figure Numbers

Study these examples and try to see how they are done:

A	B	C	D
64	70	79	89
2)128	3)211	2)158	3)267
12	21	14	24
8	1	18	27
8	0	18	27
	1		

Notice that in Ex. A when 2 will not go into 1 we divide it into 12.

In Ex. B, when 3 will not go into 2 we divide it into 21.

In Ex. C, when 2 will not go into 1 we divide it into 15.

In Ex. D, we divide 3 into —.

Copy and divide:

1.	3)258	4)372	2)176	6)425	5)385
2.	2)134	5)386	3)237	2)150	3)154
3.	3)264	6)294	5)453	4)318	6)197

Answer these questions:

4. The grocer put 376 apples into 4 baskets. If he put the same number of apples into each basket, how many were in each basket?

5. Frank sold 158 marbles in 2 days. If he sold $\frac{1}{2}$ of them each day, how many marbles did he sell each day?

Dividing Dollars and Cents

Problem: The third and fourth grades had a party together. They spent $3.56. If they shared the cost equally, how much did each grade have to pay?

We know at once that we must divide $3.56 by 2. Numbers that mean dollars and cents are divided exactly as other numbers. We must be careful to place the dollar sign and the cents' point correctly. The cents' point is placed in the answer directly above the cents' point in the number being divided.

Copy these examples and put the dollar sign and the cents' point in the right places:

1.	1 97 5)$9.85	2 15 3)$6.45	68 4)$2.72	91 2)$1.82

Copy and divide:

2.	4)$8.64	3)$9.66	2)$6.28	5)$9.70
3.	4)$1.68	3)$2.79	5)$1.55	2)$1.42
4.	4)$2.68	3)$2.25	5)$3.85	2)$1.76

Division Problems

1. Jane went over to Aunt Mary's to see if the new apartment was finished. She found Aunt Mary making a price list of some things that she needed for the apartment. At the top of the list Aunt Mary had "6 teaspoons, $7.20." How much did each teaspoon cost?

2. If 6 forks cost $7.80, how much was each?

3. Six knives cost $8.40. How much did each knife cost?

Here is the cost of the dishes:

6 cups	$3.60
6 plates	$4.20
6 fruit dishes	$2.40
6 cereal dishes	$2.64
6 saucers	$1.62
6 soup bowls	$2.16
6 water glasses	$6.00

4. What does 1 water glass cost?

5. Find the cost of a cup. Do the same for a plate, a fruit dish, a cereal dish, a saucer, and a soup bowl.

6. Six yellow table mats cost $.78. How much did each mat cost?

7. Six candle holders cost $9.96. How much did each candle holder cost?

8. Aunt Mary has 72 lace napkins that are 6 different sizes. There are the same number of napkins of each size. How many napkins are there in each size?

What did you do to find out?

How Many Sevens in a Number?

We divide a number by 7 to see how many 7's there are in the number.

1. If 2 sevens = 14, then the number of 7's in 14 = 2
2. If 4 sevens = 28, then the number of 7's in 28 = ?

3. 6 sevens = ?	42 ÷ 7 = ?
4. 9 sevens = 63	63 ÷ 7 = ?
5. 5 sevens = ?	35 ÷ 7 = ?
6. 7 sevens = 49	49 ÷ 7 = ?
7. 3 sevens = ?	21 ÷ 7 = ?
8. 8 sevens = 56	56 ÷ 7 = ?
9. 7 eights = 56	56 ÷ 8 = ?
10. 7 sixes = 42	42 ÷ 6 = ?
11. 7 nines = 63	63 ÷ 9 = ?

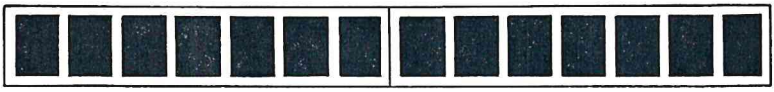
Make practice cards for these new division facts:

7	7	7	9	8
9)63	8)56	7)49	7)63	7)56

Read, giving the answers to the questions orally.

1. Six 7's = 42	42 ÷ 7 = ?	Seven 6's = 42	42 ÷ 6 = ?
2. Three 7's = 21	21 ÷ 7 = ?	Seven 3's = 21	21 ÷ 3 = ?
3. Eight 7's = 56	56 ÷ 7 = ?	Seven 8's = 56	56 ÷ 8 = ?
4. Nine 7's = 63	63 ÷ 7 = ?	Seven 9's = 63	63 ÷ 9 = ?
5. Two 7's = 14	14 ÷ 7 = ?	Seven 2's = 14	14 ÷ 2 = ?
6. Four 7's = 28	28 ÷ 7 = ?	Seven 4's = 28	28 ÷ 4 = ?
7. Five 7's = 35	35 ÷ 7 = ?	Seven 5's = 35	35 ÷ 5 = ?
8. Seven 7's = 49	49 ÷ 7 = ?	Seven 1's = 7	7 ÷ 7 = ?

Practice with the "Seven" Facts



$14 \div 7 = 2$

$21 \div 7 = 3$

The answers to these problems depend on division facts that you should know. Can you answer them orally?

1. How many 7's are there in 21? $7\overline{)21}$
2. How many 6's are there in 42? $6\overline{)42}$
3. How many is 56 divided by 7? $7\overline{)56}$
4. How many 7's are there in 42? $7\overline{)42}$
5. 14 divided by 2 is how many? $2\overline{)14}$
6. 63 divided by 7 is how many? $7\overline{)63}$
7. How many 8's are there in 56? $8\overline{)56}$
8. How many 7's are there in 28? $7\overline{)28}$
9. 28 divided by 4 is how many? $4\overline{)28}$
10. How many 7's are there in 49? $7\overline{)49}$
11. How many 3's are there in 21? $3\overline{)21}$
12. How many 9's are there in 63? $9\overline{)63}$

Answer these orally:

13. $7 \times 3 =$ $21 \div 7 =$ $7 \times 4 =$ $28 \div 4 =$
14. $7 \times 7 =$ $49 \div 7 =$ $7 \times 8 =$ $56 \div 7 =$

15. $7 \times 5 =$ $35 \div 5 =$ $7 \times 6 =$ $42 \div 6 =$

16. $7 \times 9 =$ $63 \div 9 =$ $7 \times 2 =$ $14 \div 7 =$

Copy and write the answers:

17. $28 \div 7 =$ $14 \div 2 =$ $56 \div 8 =$ $63 \div 7 =$

18. $21 \div 3 =$ $42 \div 7 =$ $35 \div 7 =$ $7 \div 7 =$

19. There are — 7's in 63.

20. There are — 9's in 63.

21. There are — 8's in 56.

22. There are — 7's in 56.

23. There are — 7's in 42.

24. There are — 7's in 49.

Finding the Prices of Things for a Valentine Party

Miss Martin's room was planning a Valentine party for the fourth and fifth grades. She sent Jane, Alice, and Bobbie to the Variety Store to find the prices of things they needed for the party.

1. "Paper lace napkins make good valentines," said Alice. "They come in packages of 9." How many packages will it take for 63 children if there is a napkin for each child?

2. If there is a sheet of red paper for each child, how many sheets will 63 children need? What will that many sheets cost at 1 sheet for a penny?

3. "It will be fun to have our guests make their own candy boxes," said Bobbie. "Each of these large sheets of blue paper should make 9 candy boxes." How many such sheets will they need to make 63 boxes? What will that many sheets cost at 4 cents each?

4. They found a box of 49 valentine cut-outs. If the cut-outs are 7 for a nickel, how many nickels will it take to pay for them? How much will this be?

5. They found a 28¢ package of valentines to use as prizes. How much would each prize cost if there were 7 valentines in the package?

6. One package of nuts will fill 7 small boxes. How many such packages will it take to fill 63 boxes? What will the packages cost at 8¢ a package?

7. There are 9 large chocolate hearts in a package. To get 63 hearts Jane would need to buy — packages. How much would the packages cost at 10¢ each?

Dividing Two-Figure Numbers by Seven

Copy and divide:

1.	$7\overline{)77}$	$7\overline{)84}$	$7\overline{)91}$	$7\overline{)70}$	$7\overline{)98}$	$7\overline{)65}$
2.	$7\overline{)71}$	$7\overline{)69}$	$7\overline{)80}$	$7\overline{)96}$	$7\overline{)68}$	$7\overline{)85}$
3.	$7\overline{)66}$	$7\overline{)79}$	$7\overline{)89}$	$7\overline{)75}$	$7\overline{)95}$	$7\overline{)86}$
4.	$7\overline{)76}$	$7\overline{)83}$	$7\overline{)64}$	$7\overline{)93}$	$7\overline{)73}$	$7\overline{)94}$
5.	$7\overline{)92}$	$7\overline{)88}$	$7\overline{)74}$	$7\overline{)82}$	$7\overline{)67}$	$7\overline{)97}$

Divide and check:

6.	$7\overline{)87}$	$7\overline{)99}$	$7\overline{)72}$	$7\overline{)90}$	$7\overline{)81}$	$7\overline{)78}$
7.	$7\overline{)49}$	$7\overline{)50}$	$7\overline{)51}$	$7\overline{)52}$	$7\overline{)53}$	$7\overline{)54}$
8.	$7\overline{)35}$	$7\overline{)36}$	$7\overline{)37}$	$7\overline{)38}$	$7\overline{)39}$	$7\overline{)40}$

Dividing Three-Figure and Four-Figure Numbers by Seven

114	126	342	122
7)798	7)882	7)2394	7)857
7	7	21	7
9	18	29	15
7	14	28	14
28	42	14	17
28	42	14	14
			3

Study these checks:

114	126	342	122
×7	×7	×7	×7
798	882	2394	854
			+3
			857

Divide and check:

1.	7)862	7)917	7)994	7)903	7)959	7)905
2.	7)875	7)945	7)987	7)860	7)910	7)952
3.	7)637	7)639	7)786	7)800	7)547	7)559
4.	7)917	7)410	7)518	7)357	7)380	7)358
5.	7)784	7)1785	7)160	7)540	7)184	7)196
6.	7)217	7)1302	7)607	7)289	7)224	7)437
7.	7)346	7)6223	7)434	7)325	7)896	7)574
8.	7)791	7)9345	7)294	7)872	7)684	7)497

A Winter Party

1. Jimmie, Jane, and Mother had a party on Saturday afternoon. Jimmie called it a winter party. There were 7 people at the party. They spent $.70 for tickets to skate. What did each ticket cost?

2. After skating they played a balloon game. Mother had 84 small rubber balloons. How many balloons did Mother have for each of the 7 people?

3. They had a peanut hunt. Ninety-eight peanuts were found and divided equally among the 7 people. How many was that for each?

4. Mother spent $.77 for paper caps and whistles. How much did she spend for each of the 7 people?

5. Jimmie said that he would spend $.70 of his money for candy to put in the candy baskets. What did the candy cost for each of the 7 baskets?

6. Fruit salad and rolls for the party cost $1.47. How much is that for each of the 7 people?

7. Mother paid $2.87 for 7 gifts. What did they cost each if she spent the same amount for each one?

Review

Add down. Check by adding up.

1.	2.	3.	4.	5.
99	765	68		6875
87	84	658		876
64	961	36	886	93
78	8	91	974	998
96	787	897	678	7865

Subtract. Check the answers.

6.	7.	8.	9.	10.
897	765	987	7896	6070
64	447	698	4997	4507

Multiply:

11.	6	7	4	7	6	7	5	8	3
	9	6	8	9	7	5	8	5	9
12.	7	8	4	7	4	5	9	9	8
	8	6	9	7	7	9	7	6	7

13.	14.	15.	16.	17.
789	986	897	679	887
2	4	3	5	6

18.	19.	20.	21.	22.
908	8800	210	897	654
7	7	9	7	9

Making Lists of Things

"The superintendent wants us to make a list of all the things in our room," said Miss Martin. "You may help me."

1. Jimmie found that there were 30 desk chairs in the room. If the chairs were listed at $5 each, how much were all of them worth?

2. There are 7 window shades listed at $2.35 each. What are the shades worth at this price?

3. David counted 27 readers on one shelf, 35 on another, and 42 on the third shelf. How many readers does that make?

4. When school began they had 110 readers. Have they lost any? If so, how many? (See the answer to Prob. 3.)

5. Helen counted the pencils. She found 36 pencils in one box, 27 in another, and 45 drawing pencils in the cupboard. How many pencils were there altogether?

6. Miss Martin told Helen to take out the pencils that were too small to use. She found 23 small pencils. How many good pencils were there in the 108 pencils?

7. Donald counted the arithmetic books. There were 38 of one kind and 47 of another. How many arithmetic books were there?

8. Donald found that 13 of the 85 arithmetic books had missing pages. How many good books were left?

9. "All of the 7 dictionaries are priced together at $8.40," said Miss Martin. What is the price of one dictionary if the price is the same for each dictionary?

10. There are 4 shelves in the story-book cupboard. Each shelf holds 84 books. How many books will the 4 shelves hold?

11. Billie found 37 crayon boxes. In each box were 7 crayons. How many crayons were there altogether?

12. Grace found 84 loose crayons. If each box holds 7 crayons, how many boxes will the loose crayons fill?

13. Jean counted 47 packages of drawing paper. Twenty-nine packages were white. The rest were colored. How many packages of colored paper were there?

14. The large dictionary was listed at $18.00, the globe at $21.50, and a large map at $12.65. What are these three things worth?

15. Alfred listed 8 small globes. The price for all of them is $2.40. What is each globe worth?

16. There are 3 pencil sharpeners worth $1.87 each. How much are the three sharpeners worth?

17. The 6 maps in the large cabinet are worth $5.85 each. What are all the maps in the cabinet worth?

Review

Give the answer to each of these examples:

1. $4\overline{)17}$	**2.** 281 × 5	**3.** 251 × 8	**4.** 9876 − 6987	**5.** 689 701 96	**6.** $3\overline{)369}$
7. 60057 − 34068	**8.** 745 × 4	**9.** $5\overline{)49}$	**10.** 675 800 709	**11.** 600 × 5	**12.** $4\overline{)3804}$

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Use the new division facts given in this chapter.
2. Divide a large number by 6 and 7.
3. Find $\frac{1}{6}$ of a number or $\frac{1}{6}$ of a number of things.
4. Tell what $\frac{1}{6}$ of a number or $\frac{1}{6}$ of anything means.
5. Know where to put the dollar sign and cents' point in dividing dollars and cents.
6. Divide numbers that have 0 in the answer.
7. Solve problems that ask two questions.

Are You Ready for the Next Chapter?

1. Can you do tests 13, 14, 15, 16, 17, and 18 without making errors? If so, you may omit the Remedial Practice (Sets 13 through 18) and study pages 273, 274, and 278 in Chapter 9.

2. If you make errors on the tests, study the examples you do not know on the pages that are shown in **heavy type** at the beginning of each of the Diagnostic Tests.

3. Write the answers to tests 17 and 18 on an answer sheet.

Diagnostic Test No. 13: Division **137**

1. $9\overline{)36}$ $9\overline{)63}$ $7\overline{)77}$ $6\overline{)36}$ $7\overline{)21}$ $4\overline{)28}$ $9\overline{)54}$ $6\overline{)42}$

2. $8\overline{)48}$ $7\overline{)14}$ $3\overline{)21}$ $5\overline{)30}$ $6\overline{)24}$ $7\overline{)56}$ $2\overline{)12}$ $2\overline{)14}$

3. $5\overline{)35}$ $7\overline{)28}$ $6\overline{)66}$ $7\overline{)42}$ $6\overline{)48}$ $8\overline{)56}$ $7\overline{)63}$ $6\overline{)12}$

4. $9\overline{)45}$ $9\overline{)27}$ $7\overline{)35}$ $6\overline{)18}$ $4\overline{)24}$ $6\overline{)30}$ $3\overline{)18}$ $6\overline{)54}$

Diagnostic Test No. 14: Division **137**

1. $6\overline{)126}$ $7\overline{)147}$ $6\overline{)186}$ $7\overline{)217}$ $6\overline{)246}$ $7\overline{)287}$

2. $6\overline{)306}$ $7\overline{)357}$ $6\overline{)360}$ $7\overline{)427}$ $6\overline{)426}$

3. $6\overline{)480}$ $7\overline{)420}$ $6\overline{)546}$ $7\overline{)497}$ $7\overline{)560}$

4. $7\overline{)371}$ $6\overline{)216}$ $7\overline{)154}$ $6\overline{)366}$ $7\overline{)390}$

5. $6\overline{)130}$ $7\overline{)91}$ $6\overline{)132}$ $7\overline{)607}$ $6\overline{)506}$

Diagnostic Test No. 15: Division **138**

1. 6)$4.56 7)$6.23 7)$45.64 6)$37.16 6)$57.84

2. 7)$9.10 6)$8.70 7)$4.90 6)$35.76 7)$10.50

3. 6)$36.63 7)$48.69 6)$6.80 7)$8.07 6)$43.20

Diagnostic Test No. 16: Division **138**

1. 4)887 5)556 3)2627 4)680 2)1365 3)70

2. 4)470 3)164 5)260 4)3560 3)245 4)290

3. 5)255 3)243 4)2843 4)3980 3)277 4)325

Diagnostic Test No. 17: Multiplication **139**

1.	8	7	9	6	3	7	6	5	7
	5	9	3	6	7	4	9	3	6
2.	6	2	7	3	6	4	8	6	7
	8	7	3	8	5	6	7	2	2
3.	7	4	3	3	6	8	8	7	9
	5	7	9	5	7	6	2	8	7
4.	2	9	5	5	3	6	5	6	9
	6	2	8	7	6	4	6	3	6

Diagnostic Test No. 18: Subtraction **139**

632	642	793	9546	322	621	9351	8958
206	403	607	6688	184	42	7827	7379

Remedial Practice in Dividing (Sets 13 and 14)

Set 13

1.	$9\overline{)36}$ = 4	$9\overline{)63}$ = 7	$7\overline{)77}$ = 11	$6\overline{)36}$ = 6	$7\overline{)21}$ = 3	$4\overline{)28}$ = 7	$9\overline{)54}$ = 6	$6\overline{)42}$ = 7
2.	$8\overline{)48}$ = 6	$7\overline{)14}$ = 2	$3\overline{)21}$ = 7	$5\overline{)30}$ = 6	$6\overline{)24}$ = 4	$7\overline{)56}$ = 8	$2\overline{)12}$ = 6	$2\overline{)14}$ = 7
3.	$5\overline{)35}$ = 7	$7\overline{)28}$ = 4	$6\overline{)66}$ = 11	$7\overline{)42}$ = 6	$6\overline{)48}$ = 8	$8\overline{)56}$ = 7	$7\overline{)63}$ = 9	$6\overline{)12}$ = 2
4.	$9\overline{)45}$ = 5	$9\overline{)27}$ = 3	$7\overline{)35}$ = 5	$6\overline{)18}$ = 3	$4\overline{)24}$ = 6	$6\overline{)30}$ = 5	$3\overline{)18}$ = 6	$6\overline{)54}$ = 9

Set 14

1.	$6\overline{)126}$ = 21	$7\overline{)147}$ = 21	$6\overline{)186}$ = 31	$7\overline{)217}$ = 31	$6\overline{)246}$ = 41	$7\overline{)287}$ = 41
	12	14	18	21	24	28
	6	7	6	7	6	7
	6	7	6	7	6	7
2.	$6\overline{)306}$ = 51	$7\overline{)357}$ = 51	$6\overline{)360}$ = 60	$7\overline{)427}$ = 61	$6\overline{)426}$ = 71	
	30	35	36	42	42	
	6	7	0	7	6	
	6	7	0	7	6	
3.	$6\overline{)480}$ = 80	$7\overline{)420}$ = 60	$6\overline{)546}$ = 91	$7\overline{)497}$ = 71	$7\overline{)560}$ = 80	
	48	42	54	49	56	
	0	0	6	7	0	
	0	0	6	7	0	

Remedial Practice in Dividing (Sets 15 and 16)

Set 15

	$ .76	$ .89	$ 6.52	$ 6.19	$ 9.64
1.	6)$4.56	7)$6.23	7)$45.64	6)$37.16	6)$57.84
	42	56	42	36	54
	36	63	36	11	38
	36	63	35	6	36
			14	56	24
			14	54	24
				2	

	$1.30	$1.45	$ .70	$ 5.96	$ 1.50
2.	7)$9.10	6)$8.70	7)$4.90	6)$35.76	7)$10.50
	7	6	49	30	7
	21	27	0	57	35
	21	24	0	54	35
	0	30		36	0
	0	30		36	0

Set 16

	221	111	875	170	682	23
1.	4)887	5)556	3)2627	4)680	2)1365	3)70
	8	5	24	4	12	6
	8	5	22	28	16	10
	7	6	21	28	16	9
	4	5	17	0	5	1
	3	1	15	0	4	
			2		1	

Remedial Practice in Multiplying (Set 17)

1.	8	7	9	6	3	7	6	5	7
	5	9	3	6	7	4	9	3	6
	40	63	27	36	21	28	54	15	42
2.	6	2	7	3	6	4	8	6	7
	8	7	3	8	5	6	7	2	2
	48	14	21	24	30	24	56	12	14
3.	7	4	3	3	6	8	8	7	9
	5	7	9	5	7	6	2	8	7
	35	28	27	15	42	48	16	56	63
4.	2	9	5	5	3	6	5	6	9
	6	2	8	7	6	4	6	3	6
	12	18	40	35	18	24	30	18	54

Remedial Practice in Subtracting (Set 18)

632 You cannot take 6 from 2 so
206 Borrow 1 from 3 and leave 2.
426 Think 12 − 6 = 6. Write 6.
Think 2 − 0 = 2. Write 2.
Think 6 − 2 = 4. Write 4.

Improvement Test No. 4

1. Mr. Glass on Ralph's paper route pays 7¢ for every paper that he gets from Ralph. He paid Ralph 63¢. How many papers did he get from Ralph?

2. Every Saturday Mrs. Moore pays Ralph 49¢ for her paper for 7 days. How much does she pay for each paper if she pays the same amount for each one?

3. Mr. Grove's paper bill for two months was $4.80. He bought the same number of papers each month. What was his bill for each month?

4. How much does Mrs. Moore pay for 29 papers if she pays 4¢ for each paper?

5. Mr. Brown paid Ralph 91¢. For how many days did he owe at 7¢ a day?

6. Ralph delivers $\frac{1}{6}$ of his 36 papers before breakfast. How many does he deliver before breakfast?

7. He delivers $\frac{1}{3}$ of his 36 papers on his way to school each morning. How many papers is this?

8. $\frac{1}{6}$ of his papers = 6. $\frac{1}{3}$ of his papers = 12. Which is more, then, $\frac{1}{6}$ or $\frac{1}{3}$?

9. The third- and fourth-grade pupils bought magazines for their school library. They cost $3.58. Each class paid one-half of the expenses. How much did each class pay?

10. How much will 26 papers cost Mrs. Moore at 4¢ each?

Were you in the hard-workers' group in this chapter?

Scores

Hard-workers

0 1 2 3 4 5 6 7 8 9 10

CHAPTER 5

THINGS TO DO IN THE WINTER

A Snow Hike

1. Miss Martin took the eighteen girls in the fourth grade on a snow hike. Each girl took a small package of cookies. There were 7 cookies in each package. How many cookies did the 18 girls take?

2. Seven of the girls took nuts. If each of the 7 took 15 nuts, how many nuts were taken altogether?

3. Eighteen girls went on the hike, and 13 girls took apples. The rest of the girls took other things. How many girls took other things?

4. Six of the 18 girls who went on the hike left cookies on a stump for the birds. How many of the girls did not leave cookies for the birds?

Multiplying Large Numbers

Multiply, using an answer sheet:

1.	857	876	498	895	759	647	654
	7	5	4	6	5	7	6
2.	497	487	965	756	969	865	859
	5	6	7	4	6	4	6
3.	695	854	756	698	489	788	947
	4	7	6	5	7	6	4
4.	598	786	688	978	897	754	675
	6	4	5	7	4	5	7

Copy these numbers and see how quickly you can multiply:

5.	567	647	788	876	498	487	675
	57	66	76	54	75	47	46
6.	895	897	965	969	698	786	895
	46	45	56	77	45	56	75
7.	978	688	865	489	654	754	695
	76	74	54	64	67	64	65
8.	856	759	947	765	857	598	497
	67	47	55	45	65	74	46

Using Zero in Dividing

1. Jimmie has $12.15 and wants to know whether he can divide it into 3 equal amounts. Can he?

```
   $4.05
3)$12.15
  12 ↓
     1
     0↓
    15
    15
```

Divide	1 cannot be divided by 3. Think 12 ÷ 3 = 4. Write 4 above the 2 of 12.
Multiply	4 × 3 = 12. Write 12 under 12.
Subtract	12 − 12 = 0. Write nothing.
Compare	0 is less than 3.
Bring down	1.
Divide	1 cannot be divided by 3. Write 0 in answer over 1.
Multiply	0×3= 0. Write 0 under 1.
Subtract	1−0= 1. Write 1 under 0.
Compare	1 is less than 3.
Bring down	5.
Divide	Think 15 ÷ 3 = 5. Write 5 over 5.
Multiply	5 × 3 = 15. Write 15.
Subtract	15 − 15 = 0. Write nothing.
Answer:	$12.15 can be divided into 3 equal amounts of $4.05 each.

```
   $4.05
3)$12.15
  12↓↓
    15
    15
```

After you have done a number of examples like this, leave out the step where you multiply by 0.

Copy and divide:

1. 3)$9.18 3)$15.12 2)$14.16 2)$12.10

Remember always to put 0 in the answer over the number you cannot divide, except the first number.

Jimmie wanted to check his problem so he multiplied 3 × $4.05.

$$\begin{array}{r} \$4.05 \\ \times 3 \\ \hline \$12.15 \end{array}$$

3 × $4.05 = ?

3 × 5 = 15. Put down 5, carry 1.

3 × 0 = 0. 0 and 1 (carried) give 1. Write 1.

3 × 4 = 12. Write 12.

Checking Division

Copy these examples and do what each one says:

1.	2.	3.	4.
6)1806	301	7)2807	401
	×6		×7

5.	6.	7.	8.
6)5406	901	7)1407	201
	×6		×7

9. Is the answer to Ex. 2 the same as the number being divided in Ex. 1?

10. Is the answer to Ex. 3 and the top number in Ex. 4 the same? Explain.

11. Which one of the Ex. 6, 7, or 8, is a check on Ex. 5? Why is it a check?

12. $5\overline{)2505}$	**13.** 501×5	**14.** $4\overline{)3600}$	**15.** 900×4
16. $4\overline{)2032}$	**17.** 508×4	**18.** $3\overline{)921}$	**19.** 307×3
20. $4\overline{)2432}$	**21.** 608×4	**22.** $2\overline{)416}$	**23.** 208×2
24. $5\overline{)1540}$	**25.** 308×5	**26.** $4\overline{)416}$	**27.** 104×4
28. $4\overline{)1624}$ (406)	**29.** 406×4	**30.** $5\overline{)3025}$ (605)	**31.** 605×5
32. $5\overline{)3515}$ (703)	**33.** 703×5	**34.** $4\overline{)3200}$ (800)	**35.** $800 \times 4 = 3200$

Copy and multiply:

1.	\$5.43 × 6	\$7.68 × 5	\$9.35 × 4	\$8.76 × 6	\$4.97 × 7
2.	\$3.87 × 7	\$7.68 × 6	\$9.63 × 7	\$4.95 × 5	\$4.97 × 6

A Snow-Jumping Contest

These were the rules for the snow-jumping contest. Each boy was to have one jump from the same line. Any jump less than 3 feet was not to be counted. A jump was not to be counted if the boy jumping slipped to the ground. The team with the greatest number of jumps that were counted would be the winner.

1. Make two marks with a piece of chalk on the floor which you think are 3 feet apart.

2. Use a ruler to find the distance between the two marks on the floor.

3. Were the chalk marks more or less than 3 feet apart?

4. Did the pupil who made the two chalk marks estimate 3 feet correctly?

5. Was the estimate too large or too small?

6. In the snow-jumping contest each boy was to jump at least 3 feet. Was that a big jump for a boy in either the fourth or the fifth grade?

What Is the First Number in the Answer?

Give orally the numbers that should go where the question marks are:

1.

```
  ?21
7)847
 7
 14
 ??
   7
   7
```

2.

```
  ?00
7)6300
 ??
   0
   0
   ?
   0
```

3.

```
  ?24
7)5771
 56
  17
  14
  ??
  28
   3
```

4.

```
  ?81
7)4772
 42
  5?
  56
  12
   7
   ?
```

5.

```
  ?0
6)360
 36
   0
   ?
```

6.

```
  ?2
6)556
 54
 ??
 12
  4
```

7.

```
  ?16
6)4300
 42
  10
   6
  ??
  36
   ?
```

8.

```
  ?01
6)4806
 48
   0
   ?
   6
   6
```

Place an answer sheet just above each row of examples. Write the first number in the answer to each example.

9. 7)499 7)5614 7)630 7)4242 7)357

10. 6)3511 6)366 6)557 6)627 6)2412

11.	$5\overline{)477}$	$5\overline{)418}$	$5\overline{)3850}$	$5\overline{)3105}$	$5\overline{)255}$
12.	$4\overline{)224}$	$4\overline{)2662}$	$4\overline{)300}$	$4\overline{)388}$	$4\overline{)3580}$
13.	$3\overline{)283}$	$3\overline{)1741}$	$3\overline{)257}$	$3\overline{)2360}$	$3\overline{)2000}$
14.	$2\overline{)1120}$	$2\overline{)155}$	$2\overline{)128}$	$2\overline{)1750}$	$2\overline{)1802}$

Rolling Snowballs

1. One afternoon when snow was on the ground, Jane and Jimmie went home from school and rolled large snowballs. Jimmie rolled his first ball over 27 times. Jane rolled her first ball over 9 times. How many times did they roll both balls?

2. When Father came home he helped Jane roll her first ball twice as many times as she had already rolled it over. Jane had rolled it over 9 times. How many times did they roll it over?

3. If Jimmie had rolled his ball 6 times and Jane had rolled hers 3 times, Jimmie would have rolled

his twice as many times as Jane. You see that $6 \div 3 = ?$

4. Prob. 1 explains that Jimmie rolled his ball 27 times and Jane rolled her ball 9 times. Did Jimmie roll his ball 2 or 3 times as many times as Jane rolled her ball?

Using Eight in Multiplying

Eight pupils needed paper for their notebooks. Jane counted out 8 sheets of paper for each one. How many sheets did she count out?

Betty said, "We need eight 8's. Seven 8's = 56. One more 8 added to 56 equals 64. So eight 8's = 64. Jane counted out 64 sheets of paper."

Eight 2's = 16	Two 8's = ?
Eight 4's = ?	Four 8's = ?
Eight 7's = ?	Seven 8's = 56
Eight 6's = ?	? 8's = 48
Eight 9's = 72	Nine 8's = ?

Make practice cards for these new multiplication facts:

8 8 64	8 9 72	9 8 72

1.

6	7	8
×8	×8	×8

2. The answers in Ex. 1 grow larger by 8. Why?

Practice in Multiplying by Eight and Nine

Read the answers:

1.	$8 \times 1 =$	Eight 1's =	$8 \times 8 =$	Eight 8's =
2.	$8 \times 4 =$	Eight 4's =	$4 \times 8 =$	Four 8's =
3.	$8 \times 6 =$	Eight 6's =	$6 \times 8 =$	Six 8's =
4.	$8 \times 2 =$	Eight 2's =	$2 \times 8 =$	Two 8's =
5.	$8 \times 9 =$	Eight 9's =	$9 \times 8 =$	Nine 8's =
6.	$8 \times 3 =$	Eight 3's =	$3 \times 8 =$	Three 8's =
7.	$8 \times 5 =$	Eight 5's =	$5 \times 8 =$	Five 8's =
8.	$8 \times 7 =$	Eight 7's =	$7 \times 8 =$	Seven 8's =

You have just used 8 in the multiplication facts. In studying these facts you used only three new facts that you had not learned before. Here are the three new ones. *Study them until you know them.*

9	8	8
8	8	9
72	64	72

Answer orally:

$8 \times 9 + 1 =$ $8 \times 8 + 2 =$ $9 \times 8 + 3 =$ $8 \times 9 + 2 =$

Place an answer sheet under these examples and multiply:

1.	90	80	23	32	145	145	132
	8	9	8	9	8	9	8
2.	210	135	216	103	210	304	312
	8	8	9	8	9	8	9

3.	981	880	88	50	58	678	844
	8	9	8	8	9	8	9
4.	808	800	84	79	49	809	800
	9	8	9	8	8	8	9
5.	700	678	89	80	80	398	81
	8	9	8	9	8	8	9
6.	999	888	76	82	78	496	77
	8	9	8	9	9	8	8
7.	808	709	70	48	83	878	97
	8	8	8	9	8	9	8
8.	898	787	9	8	8	988	68
	8	9	8	8	9	8	9

Riding on Sleds

1. One Saturday morning Frank, George, and Mary brought their sleds over early to ride down the hill with Jane and Jimmie. Each of the children had a sled that cost $2.00. How much did all of the sleds cost?

2. It takes 8 minutes to ride down the hill and walk back up it again. How many minutes does it take each child to make 20 trips down and back?

3. It is 200 feet from where the sleds start to where they stop at the bottom of the hill. How many feet is it down the hill and back? How many feet is it down the hill and back 8 times?

4. When they had finished riding their sleds they went into the house. Mother gave each of the 5 children a glass of grape juice and 10 animal crackers. How many crackers did she give them?

Using Zero in Multiplying

Cover the answers and multiply. Then compare your answers with those in the book.

1.	80	90	70	60	30	50
	5	7	8	3	4	6
	400	630	560	180	120	300
2.	57	86	93	45	69	53
	80	90	70	60	40	20
	4560	7740	6510	2700	2760	1060
3.	48	63	76	85	37	
	400	800	600	700	900	
	19200	50400	45600	59500	33300	

4.	409	690	807	940	630
	53	47	28	61	94
	1227	4830	6456	940	2520
	2045	2760	1614	5640	5670
	21677	32430	22596	57340	59220

Copy and multiply. In each example put the bottom number where it will be easiest to multiply by it.

5.	83	58	47	82	16	94
	40	80	70	90	20	40
6.	59	93	84	72	67	43
	500	800	600	200	700	800
7.	803	730	409	870	506	360
	57	63	85	74	67	81

8. 78×785 97×400 69×863

9. 94×308 67×809 70×800

Using Eight in Two-Figure Multiplication

In these examples tell what numbers should go where the question marks are:

1.	**2.**	**3.**	**4.**
878	989	808	678
88	78	98	99
70?4	791?	64?4	610?
70?4	692?	72??	????
77264	771??	7?1?4	6712?

What numbers should go where the question marks are?

5.	6.	7.	8.
908	89	997	999
80	700	87	88
72?4?	623??	69?9	799?
		79?6	????
		86??9	8791?

Copy and multiply. In each example you must carry numbers. Remember the number that you are to carry.

9.	878	989	808	678	908	89
	88	78	98	99	80	700

Now check the answers to the last two examples in 9 with the answers to Ex. 5 and 6.

10.	997	999	809	708	688	989
	87	88	87	97	99	86
11.	888	608	700	864	798	884
	99	90	89	97	85	94
12.	778	668	796	887	808	500
	99	87	86	97	99	80
13.	897	978	795	897	587	879
	78	87	86	87	79	78
14.	809	709	900	808	987	837
	88	76	87	79	68	98

Visiting a Farm in the Winter

Jane Jimmie Ralph

1. Early one Saturday morning Ralph and his mother took Jane and Jimmie to the country to spend the day on their farm. Ralph's father was in the shed chopping wood. It was too cold for him to work out of doors. The children piled some of the wood. Each pile has 9 sticks. Study the picture and tell how many sticks Jane has piled.

2. How many sticks has Jimmie piled?

3. How many sticks has Ralph piled?

4. How many sticks have Jane and Jimmie piled together? (See Prob. 1 and 2.)

5. How many sticks have Jane and Ralph piled together? (See Prob. 1 and 3.)

6. How many sticks have Jimmie and Ralph piled?

7. How many sticks have all of them piled?

8. If Ralph's father can chop 6 pieces of wood in a minute, how many can he chop in 19 minutes?

Using Nine in Multiplying

We know that:

Nine 5's = 45	Five 9's = ?
Nine 2's = ?	Two 9's = 18
Nine 4's = 36	? 9's = 36
Nine 7's = ?	Seven 9's = 63
Nine 8's = 72	Eight 9's = 72
Nine 1's = ?	One 9 = ?

Nine 6's means to add 6+6+6+6+6+6+6+6+6.

Six 9's means to add 9+9+9+9+9+9.

When we add nine 6's, the sum is 54. Also, when we add six 9's, the sum is —.

Study these facts carefully. The one in the box is new. You have not had it before. Make a practice card for it.

5	7	3	9	4	6	2	8
9	9	9	9	9	9	9	9
45	63	27	81	36	54	18	72

Give the answers orally:

1.	$9 \times 8 =$	Nine 8's =	$8 \times 9 =$	Eight 9's =
2.	$9 \times 4 =$	Nine 4's =	$4 \times 9 =$	Four 9's =
3.	$9 \times 6 =$	Nine 6's =	$6 \times 9 =$	Six 9's =
4.	$9 \times 2 =$	Nine 2's =	$2 \times 9 =$	Two 9's =
5.	$9 \times 3 =$	Nine 3's =	$3 \times 9 =$	Three 9's =
6.	$9 \times 5 =$	Nine 5's =	$5 \times 9 =$	Five 9's =
7.	$9 \times 7 =$	Nine 7's =	$7 \times 9 =$	Seven 9's =
8.	$9 \times 9 =$	Nine 9's =	$9 \times 1 =$	Nine 1's =

Practice in Multiplying by Eight and Nine

Use an answer sheet and multiply:

1.	946	814	395	728	674	173	582
	8	8	8	8	8	8	8
2.	738	296	851	456	932	741	639
	8	8	8	8	8	8	8
3.	152	347	846	159	378	219	256
	8	8	8	8	8	8	8
4.	347	765	842	951	851	796	432
	9	9	9	9	9	9	9
5.	732	964	926	587	635	892	137
	9	9	9	9	9	9	9
6.	874	182	719	563	839	945	642
	9	9	9	9	9	9	9

Copy and multiply:

7.	943	824	158	378	752	691	462
	89	98	89	98	89	89	98
8.	762	614	892	387	569	473	951
	98	89	98	89	89	98	89
9.	491	876	394	561	359	814	725
	89	98	89	98	89	98	98

Roasting Peanuts

1. One Sunday afternoon when it was too cold for Jane and Jimmie to play outside, Father suggested that they roast peanuts. After they were roasted, Jimmie and Jane divided the peanuts into piles of 19 each. Jane took 8 piles. How many peanuts did she take?

2. Jimmie took 9 piles. How many did he take? (There were 19 peanuts in each pile.)

3. Jimmie gave Father 7 piles. How many peanuts did Father receive?

4. Jane gave Mother the 6 remaining piles. How many peanuts did Mother receive? (See Prob. 2.)

5. How many peanuts did they roast in all? (Add the answers of Prob. 1, 2, 3, and 4.)

6. Jane ate $\frac{1}{4}$ of her peanuts. How many did she eat? (See Prob. 1.)

7. How many peanuts did Jane have left after she ate $\frac{1}{4}$ of them? (See Prob. 1 and 6.)

8. "I bought 40 pounds of raw peanuts last fall," said Father. "We have eaten $\frac{1}{4}$ of them." How many pounds had they eaten?

9. "Raw peanuts are much cheaper than roasted ones," said Father. "Raw peanuts cost $.10 a pound." How much did the 40 pounds cost him?

10. Roasted peanuts would have cost Father $.15 a pound. How much would 40 pounds have cost?

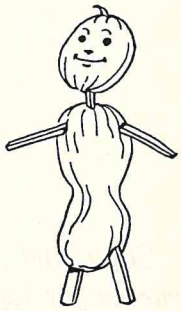
11. Use the answers to Prob. 9 and 10 and see how much Father saved by buying raw peanuts.

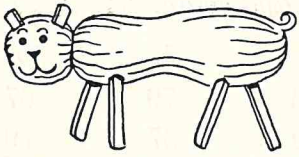
12. How much would 36 pounds of raw peanuts cost Father at $.10 a pound?

13. How much would 36 pounds of roasted peanuts cost Father at $.15 a pound?

14. How much would Father save by buying raw peanuts instead of roasted peanuts? (See Prob. 12 and 13.)

15. "Here is something to do with peanuts," said Mother. She took a long peanut, a little round one, and some pieces of toothpick and made a man like this. Jane made 8 men like this one. How many pieces of toothpick did she use? How many peanuts did she use?





16. Jimmie made a dog that looked like this. How many pieces of toothpick would it take to make 9 such dogs? How many peanuts would it take?

17. Jane can pick up 9 peanuts in a handful. How many can she pick up in 9 handfuls?

18. How many can Father pick up in 9 handfuls, if he can pick up 17 in a handful?

19. Father put some peanuts in a bowl. "Guess how many peanuts there are in the bowl," he said. Jimmie guessed 125. Jane guessed 95. There were 103 peanuts in the bowl. How many too few did Jane guess? How many too many did Jimmie guess?

Checking Two-Figure Multiplication

You have been taught to check your two-figure multiplication by changing the places of the numbers and then multiplying them. For example, you get the same answer in these two multiplication examples.

EXAMPLE	CHECK
89	67
67	89
623	603
534	536
5963	5963

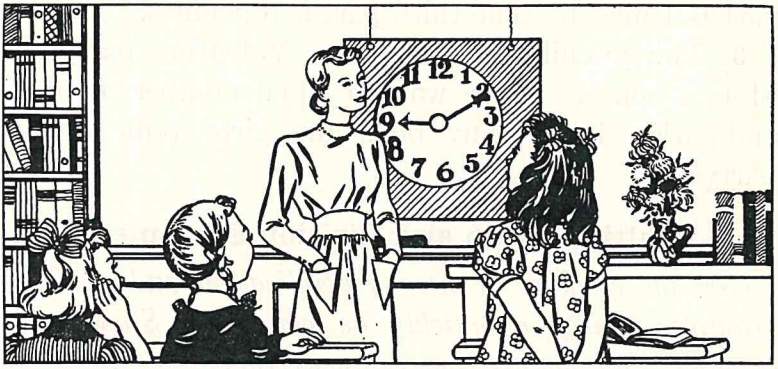
Copy and multiply. Notice that you get the same answer for Ex. 1 and 2, for Ex. 3 and 4, the same for 5 and 6, and so on. This means that Ex. 2 is a check for Ex. 1. Ex. 4 is a check for Ex. 3, and so on.

1.	2.	3.	4.	5.	6.
98	78	89	76	79	67
78	98	76	89	67	79

7.	8.	9.	10.	11.	12.
67	54	76	84	92	99
54	67	84	76	99	92

13.	14.	15.	16.	17.	18.
90	89	70	60	99	98
89	90	60	70	98	99

Remember to Find the Second Part of the Answer



"If your mother asked you how we spend our school day, what would you say to her, Jane?" asked Miss Martin.

"I would tell her about the part of the day that we give to our studies like reading, arithmetic, and history," said Jane. "Then I would tell her about the time we spend on the activities like music, health, art, nature walks, and auditorium programs."

"You see, I asked Jane only one question," said Miss Martin. "Yet, her answer has more than one part to it."

So it is with some problems in arithmetic. They ask only one question, but the answer has two parts. *Always remember to find the second part of the answer.*

1. How many dimes and nickels are there in 15¢? The first part of the answer is 1 dime. The second part is 1 nickel.

2. How many dimes, nickels, and pennies are there in $.28? (Use as many dimes as possible.)

The first part of the answer is 2 dimes. The second part is 1 nickel. The third part is 3 pennies.

3. Thirty children went to a Valentine party at Mary's house. There was an equal number of boys and girls. How many boys and girls went to the party?

Multiplication and Division Examples

Give the answers to these multiplication and division examples orally as quickly as you can. Study any examples that you are slow in answering.

1.	$6 \times 9 =$	$54 \div 6 =$	$7 \times 8 =$	$56 \div 7 =$
2.	$7 \times 6 =$	$42 \div 7 =$	$8 \times 6 =$	$48 \div 8 =$
3.	$4 \times 8 =$	$32 \div 4 =$	$4 \times 9 =$	$36 \div 4 =$
4.	$7 \times 9 =$	$63 \div 7 =$	$7 \times 7 =$	$49 \div 7 =$
5.	$6 \times 7 =$	$42 \div 6 =$	$4 \times 7 =$	$28 \div 4 =$
6.	$7 \times 5 =$	$35 \div 7 =$	$5 \times 9 =$	$45 \div 5 =$
7.	$8 \times 5 =$	$40 \div 8 =$	$9 \times 6 =$	$54 \div 9 =$
8.	$3 \times 9 =$	$27 \div 3 =$	$8 \times 7 =$	$56 \div 8 =$
9.	$6 \times 8 =$	$48 \div 6 =$	$6 \times 6 =$	$36 \div 6 =$
10.	$8 \times 4 =$	$32 \div 8 =$	$9 \times 7 =$	$63 \div 9 =$
11.	$3 \times 8 =$	$24 \div 3 =$	$7 \times 4 =$	$28 \div 7 =$

Throwing Rings

1. Instead of going to the playground, the fourth grade opened several windows and played throwing rings. The pupils were grouped into two teams. There were 18 children on each team. The pupils on Team A threw the rings 18 times on the peg marked 97. What was the score of team A? What is 18×97?

2. They threw the rings 17 times on the peg marked 98. How much did this score?

3. They threw the rings 19 times on the peg marked 199. How much did this score?

4. The pupils on Team B threw the rings 16 times on the peg marked 198. How much did this score?

5. They threw the rings 14 times on the peg marked 99. How much did this score?

6. They threw the rings 18 times on the peg marked 98. How much did this score?

7. Make up other problems for this game.

More Multiplication and Division Examples

Give the answers orally:

1.	$4 \times 6 =$	$24 \div 4 =$	$5 \times 6 =$	$30 \div 5 =$
2.	$9 \times 4 =$	$36 \div 9 =$	$5 \times 8 =$	$40 \div 5 =$
3.	$3 \times 8 =$	$24 \div 3 =$	$6 \times 8 =$	$48 \div 6 =$
4.	$7 \times 4 =$	$28 \div 7 =$	$6 \times 6 =$	$36 \div 6 =$
5.	$3 \times 6 =$	$18 \div 3 =$	$8 \times 3 =$	$24 \div 8 =$
6.	$4 \times 4 =$	$16 \div 4 =$	$8 \times 4 =$	$32 \div 8 =$
7.	$5 \times 7 =$	$35 \div 5 =$	$9 \times 3 =$	$27 \div 9 =$
8.	$4 \times 5 =$	$20 \div 4 =$	$3 \times 7 =$	$21 \div 3 =$
9.	$6 \times 4 =$	$24 \div 6 =$	$6 \times 3 =$	$18 \div 6 =$
10.	$3 \times 9 =$	$27 \div 3 =$	$7 \times 6 =$	$42 \div 7 =$
11.	$6 \times 9 =$	$54 \div 6 =$	$5 \times 9 =$	$45 \div 5 =$
12.	$7 \times 9 =$	$63 \div 7 =$	$2 \times 9 =$	$18 \div 2 =$

Reviewing and Checking Division

You have been taught to check your division examples by multiplying the answer by the number that you divided by. If you have divided correctly, this answer and the number that has been divided are the same.

Study this example.

EXAMPLE

```
   101
9)909
  9
   0
   0
    9
    9
```

CHECK

101 is the answer to the example.
×9 is the number divided by.
909 is the number that has been divided.

In these examples tell why Ex. 2 is a check for Ex. 1. Ex. 4 is a check for Ex. 3, and so on.

Copy these examples and work:

1.	**2.**	**3.**	**4.**
$8\overline{)568}$	$\begin{array}{r}71\\ \times 8\\ \hline\end{array}$	$9\overline{)630}$	$\begin{array}{r}70\\ \times 9\\ \hline\end{array}$
5.	**6.**	**7.**	**8.**
$7\overline{)784}$	$\begin{array}{r}112\\ \times 7\\ \hline\end{array}$	$7\overline{)490}$	$\begin{array}{r}70\\ \times 7\\ \hline\end{array}$
9.	**10.**	**11.**	**12.**
$8\overline{)560}$	$\begin{array}{r}70\\ \times 8\\ \hline\end{array}$	$7\overline{)1470}$	$\begin{array}{r}210\\ \times 7\\ \hline\end{array}$

62		CHECK
$6\overline{)375}$	62	the answer.
36	$\times 6$	the number you divided by.
15	372	
12	$+3$	the remainder.
3 remainder	375	the number that has been divided.

Copy, divide, and check. In checking division, remember that after you have multiplied you must add the remainder.

13.	**14.**	**15.**	**16.**	**17.**
$7\overline{)467}$	$8\overline{)585}$	$9\overline{)4118}$	$8\overline{)539}$	$6\overline{)347}$
18.	**19.**	**20.**	**21.**	**22.**
$5\overline{)273}$	$6\overline{)375}$	$4\overline{)215}$	$7\overline{)503}$	$7\overline{)465}$
23.	**24.**	**25.**	**26.**	**27.**
$6\overline{)317}$	$5\overline{)296}$	$7\overline{)373}$	$8\overline{)415}$	$9\overline{)658}$

Do You Remember Your Addition and Subtraction Facts?

Place an answer sheet under these examples and write the answers. See if you can do the tests without a single error.

Diagnostic Test No. 19: Addition **300-301**

1.	2.	3.	4.	5.
69	439	536	199	449
78	422	937	663	344
24	13	271	253	658
27	100	215	410	568

6.	7.	8.	9.	10.
778	927	874	1896	9
983	121	789	896	89
260	876	987	69	798
701	687	478	567	68

Diagnostic Test No. 20: Subtraction **301-302**

1.	1356	6988	652	7877	6545	7999
	1023	6804	250	5840	1133	3956
2.	352	9878	112	1363	1101	1347
	142	7771	38	665	113	558
3.	1212	1546	1001	1354	662	9789
	882	588	545	385	501	3152
4.	1220	1334	3446	9987	6112	1857
	459	787	3014	1042	647	878

More Multiplication and Division

Copy and work:

1. 185 $\times 6$	$6\overline{)1110}$	99 $\times 7$	$7\overline{)693}$	67 $\times 8$	$8\overline{)536}$
2. 889 $\times 7$	$7\overline{)6223}$	764 $\times 8$	$8\overline{)6112}$	467 $\times 9$	$9\overline{)4203}$
3. 990 $\times 7$	$7\overline{)6930}$	700 $\times 9$	$9\overline{)6300}$	107 $\times 9$	$9\overline{)963}$

4. What do you notice about the first two parts of Ex. 1? What do you notice about each multiplication example and the division example that follows it in the three problems above?

5. Each multiplication example is the check for the — example which follows it, and each division example is a check for the — example that is before it.

Give the answers orally to these examples:

6. 2 $\times 8$	$8\overline{)16}$	7 $\times 9$	$9\overline{)63}$	6 $\times 8$	$8\overline{)48}$
7. 9 $\times 5$	$5\overline{)45}$	9 $\times 6$	$6\overline{)54}$	9 $\times 3$	$3\overline{)27}$
8. 8 $\times 5$	$5\overline{)40}$	9 $\times 4$	$4\overline{)36}$	5 $\times 9$	$9\overline{)45}$

The division examples are checks for the multiplication examples:

9.	$\begin{array}{r}7\\ \times 8\\ \hline\end{array}$	$8\overline{)56}$	$\begin{array}{r}9\\ \times 7\\ \hline\end{array}$	$7\overline{)63}$	$\begin{array}{r}3\\ \times 8\\ \hline\end{array}$	$8\overline{)24}$
10.	$\begin{array}{r}3\\ \times 9\\ \hline\end{array}$	$9\overline{)27}$	$\begin{array}{r}5\\ \times 8\\ \hline\end{array}$	$8\overline{)40}$	$\begin{array}{r}4\\ \times 8\\ \hline\end{array}$	$8\overline{)32}$

Earning Money by Shoveling Snow

Jimmie has been saving his money to buy a pony as soon as the cold weather is over. He has 8 half dollars, 19 quarters, 28 dimes, 39 nickels, and 45 pennies in his savings bank.

1. How much money do his 8 half dollars make?

2. How much money do his 19 quarters make?

3. How much money do his 28 dimes make?

4. How much money do his 39 nickels make?

5. How much money do his 45 pennies make?

6. How much money does he have in all? (Add the answers to Prob. 1, 2, 3, 4, and 5.)

7. Jimmie can buy a pony for $15.00. How much more money does he need? (Use the answer to Prob. 6.)

8. Father promised him $.45 for shoveling snow off the walks. How much more money does he need now? (See Prob. 7.)

9. He plans to borrow this amount from Father, Mother, and Jane. How much must he borrow from each if he borrows the same amount from each one? Does he borrow $\frac{1}{3}$ or $\frac{1}{4}$ from each one? (Use the answer to Prob. 8.)

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Multiply a number by 8 or 9.
2. Give the new multiplication facts given in this chapter.
3. Divide and check division problems that have 0 in the answer.
4. Tell quickly what the first figure is in the answer to simple division problems.
5. Use zero in multiplying.
6. Estimate a length.

Are You Ready for the Next Chapter?

1. Can you do tests 21, 22, 23, 24, and 25 without making errors? If so, you may omit the Remedial Practice (Sets 21-25) and study pages 281-282.

2. If you make errors on the tests, study the examples you do not know on the pages shown in **heavy type.**

3. Write the answers to all tests except No. 23 on answer sheets.

DIAGNOSTIC TEST NO. 21: MULTIPLICATION **171**

1.	3	9	9	6	5	9	7	8	2
	8	6	7	8	9	4	3	2	8
2.	3	5	8	2	4	8	6	8	9
	9	8	6	9	7	5	4	4	3

Multiply:

3.	5	7	4	6	9	9	7	8	7
	7	8	9	9	5	2	5	3	9
4.	6	4	3	8	8	9	4	9	8
	3	8	6	9	8	9	3	8	7

Diagnostic Test No. 22: Multiplication **172**

1.	81	91	90	700	601	600	511	501
	8	9	8	9	9	8	9	8

2.	891	760	870	891	405	405	123
	9	8	9	8	9	8	9

Diagnostic Test No. 23: Multiplication **172**

1.	896	998	778	994	765	886	994
	48	67	49	65	79	48	89

2.	608	900	89	98	678	996	887
	79	84	10	100	85	67	95

Diagnostic Test No. 24: Multiplication **173**

1.	4	7	4	6	3	7	6	7	7
	5	9	3	6	7	4	9	3	6
2.	6	2	7	3	6	4	8	6	7
	8	7	7	4	5	6	7	2	2
3.	7	4	5	5	6	8	5	7	9
	5	7	7	3	7	6	4	8	7

4.	2	3	8	5	3	6	5	6	9
	6	5	4	8	6	4	6	3	6

Diagnostic Test No. 25: Multiplication **173**

1.	$ .89	$1.25	$1.10	$2.00
	9	8	7	6
2.	$ .99	$3.78	$ .70	$6.97
	8	4	5	9

Remedial Practice in Multiplying
(Sets 21 and 22)
Set 21

1.	3	9	9	6	5	9	7	8	2
	8	6	7	8	9	4	3	2	8
	24	54	63	48	45	36	21	16	16
2.	3	5	8	2	4	8	6	8	9
	9	8	6	9	7	5	4	4	3
	27	40	48	18	28	40	24	32	27
3.	5	7	4	6	9	9	7	8	7
	7	8	9	9	5	2	5	3	9
	35	56	36	54	45	18	35	24	63
4.	6	4	3	8	8	9	4	9	8
	3	8	6	9	8	9	3	8	7
	18	32	18	72	64	81	12	72	56

Set 22

1.

81	91	90	700	601	600	511	501
8	9	8	9	9	8	9	8
648	819	720	6300	5409	4800	4599	4008

2.

891	$9 \times 1 = 9$. Write 9.
9	$9 \times 9 = 81$. Write 1, carry 8.
8019	$9 \times 8 = 72$. $72 + 8$ (carried) $= 80$. Write 80.

Remedial Practice in Multiplying
(Sets 23-25)
Set 23

1.

896	998	778	994
48	67	49	65
7168	6986	7002	4970
3584	5988	3112	5964
43008	66866	38122	64610

765	886	994
79	48	89
6885	7088	8946
5355	3544	7952
60435	42528	88466

2.

608	900	89	98
79	84	10	100
5472	3600	890	9800
4256	7200		
48032	75600		

Set 24

1.	4	7	4	6	3	7	6	7	7
	5	9	3	6	7	4	9	3	6
	20	63	12	36	21	28	54	21	42
2.	6	2	7	3	6	4	8	6	7
	8	7	7	4	5	6	7	2	2
	48	14	49	12	30	24	56	12	14
3.	7	4	5	5	6	8	5	7	9
	5	7	7	3	7	6	4	8	7
	35	28	35	15	42	48	20	56	63
4.	2	3	8	5	3	6	5	6	9
	6	5	4	8	6	4	6	3	6
	12	15	32	40	18	24	30	18	54

Set 25

1. $ .89 $9 \times 9 = 81$. Write 1, carry 8.
$\times 9$ $9 \times 8 = 72$. $72 + 8$ (carried) $= 80$.
$8.01 Write 80. The answer is $8.01.

2. $3.78 $4 \times 8 = 32$. Write 2, carry 3.
$\times 4$ $4 \times 7 = 28$. $28 + 3$ (carried) $= 31$.
$15.12 Write 1, carry 3.
$4 \times 3 = 12$. $12 + 3$ (carried) $= 15$.
Write 15. The answer is $15.12.

Improvement Test No. 5

1. On the twenty-second of February there were more flags of the United States than usual on display at school. It was George Washington's birthday. He was the first President of the United States. Find this date on your calendar. There were 8 flags in each of 7 rooms. How many flags were on display?

2. Six other rooms each had 9 flags. How many flags is this?

3. Three rooms each had 7 flags. How many flags were in these rooms?

4. How many flags were there in these 9 rooms? (Add the answers to Prob. 2 and 3.)

5. How many more flags were there in the 6 rooms than in the 3 rooms? (See Prob. 2 and 3.)

6. On this day 36 children from 9 rooms were in a play about George Washington. There were the same number of children from each room. How many were there from each room?

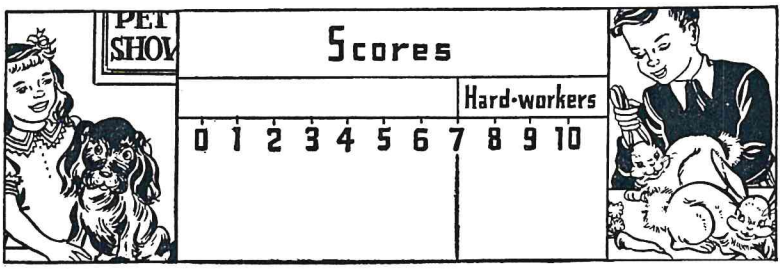
7. One-half of the 4 children from each room were girls. How many girls were there from each room?

8. How many girls were there in all? (See Prob. 6 and 7.)

9. All the seats in the auditorium were used by pupils during the play. There were 24 seats in each row. There were 19 rows of seats in all. How many seats did the pupils use?

10. The shortest month of the year has — days.

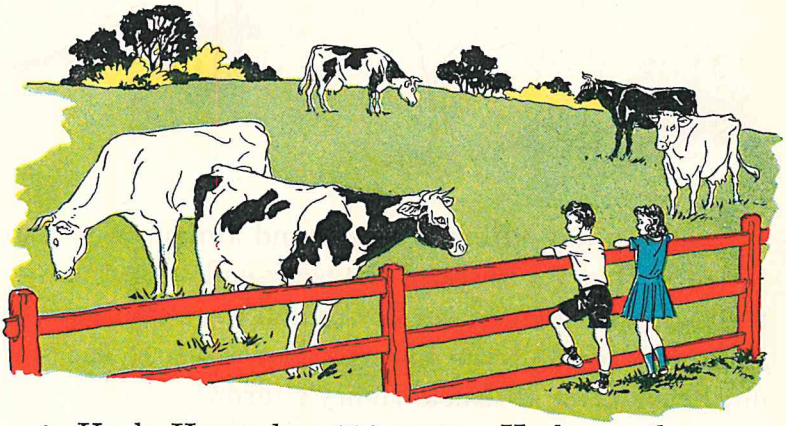
Were you in the hard-workers' group in this chapter?



CHAPTER 6

ANIMALS ON THE FARM

Cows in the Pasture



1. Uncle Henry has 116 cows. He keeps the same number in each of 4 pastures. How many cows are there in each pasture?

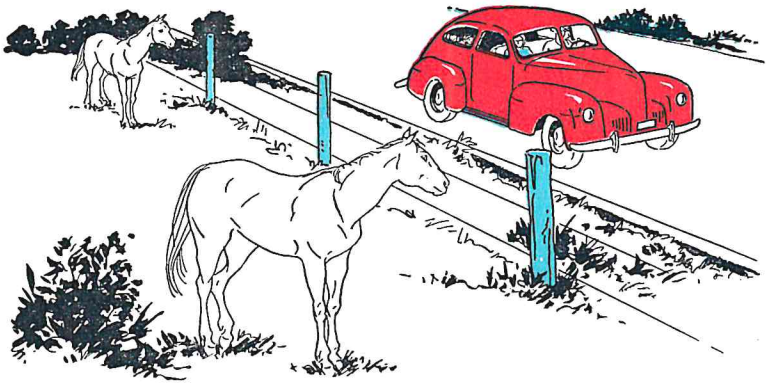
2. Seven of the men who work for Uncle Henry milk 35 of the cows. How many cows does one man milk, if each milks the same number?

3. If 29 of the 116 cows are brown, how many of the cows are some other color?

4. Uncle Henry is going to take 42 cows to town to sell them. He can take 6 cows in each truck load. How many loads will be needed to take all the cows?

5. If he can take 7 cows in each truck load, how many loads will be needed? (See Prob. 4.)

Counting Horses and Cows



One Saturday afternoon Jane and Jimmie went out to Uncle Henry's to spend the week-end. On the way there Jimmie counted the horses and cows that he saw. Jane also counted the horses and cows that she saw until they came to Uncle Henry's farm.

"I have counted 29 horses," said Jimmie.

"I have counted 19," said Jane.

"To estimate about how many horses 19 horses and 29 horses are, estimate that 19 is almost 20 and 29 is about 30," said Jimmie.

"Then you and I saw about 50 horses," said Jane.

1. If Jane saw 19 horses and Jimmie saw 29, how many horses did both see?

2. Their estimate was 50 horses. They saw 48. Their estimate was—more than the number of horses.

3. Jane saw 13 horses on her side of the road and 6 on Jimmie's side. She saw — more horses on her side of the road than on Jimmie's side.

4. Jimmie saw 20 horses on his side of the road and 9 on Jane's side. How many more horses did he see on his side of the road than on Jane's side?

5. Before they reached Uncle Henry's farm they saw 14 more horses. How many horses did they see in all if they had already seen 48?

6. Before they reached Uncle Henry's house they met 6 horses pulling one large wagon. If one-third of these horses were black, how many were black?

7. Eighteen of the 62 horses they saw had black spots. Twenty-nine of them had white spots. How many of the horses had either black or white spots?

8. If 47 of the 62 horses had either black or white spots, how many of them did not have black or white spots?

9. Fifteen of the 62 horses were pulling wagons. How many horses were not pulling wagons?

10. One-half of the 62 horses were eating grass. How many horses were eating grass?

11. Jane counted 20 cows. One-fourth of them were spotted. How many of them were spotted?

12. How many cows were not spotted? (See Prob. 11.)

13. Jimmie counted 15 cows. One-fifth of them were spotted. How many of them were spotted?

Do You Remember Your Division Facts?

In this chapter you will have many examples and problems to do in division. You should review carefully all of the division facts you have had.

Give the answers orally as quickly as you can:

1.	$3\overline{)30}$	$4\overline{)40}$	$8\overline{)80}$	$7\overline{)70}$	$5\overline{)50}$	$9\overline{)90}$
2.	$2\overline{)16}$	$3\overline{)6}$	$5\overline{)60}$	$2\overline{)4}$	$2\overline{)14}$	$2\overline{)10}$
3.	$6\overline{)12}$	$9\overline{)18}$	$2\overline{)6}$	$3\overline{)9}$	$2\overline{)8}$	$2\overline{)12}$
4.	$4\overline{)8}$	$2\overline{)18}$	$8\overline{)16}$	$3\overline{)15}$	$7\overline{)14}$	$2\overline{)20}$
5.	$5\overline{)10}$	$7\overline{)21}$	$5\overline{)20}$	$5\overline{)15}$	$4\overline{)32}$	$5\overline{)25}$
6.	$3\overline{)12}$	$6\overline{)30}$	$6\overline{)18}$	$6\overline{)24}$	$3\overline{)27}$	$4\overline{)20}$
7.	$9\overline{)27}$	$5\overline{)35}$	$4\overline{)12}$	$9\overline{)189}$	$8\overline{)32}$	$4\overline{)16}$

These division examples need more study than some of the others. If you do not already know them, study them until you can give the answers quickly.

8.	$8\overline{)24}$	$3\overline{)18}$	$8\overline{)248}$	$9\overline{)45}$	$6\overline{)36}$	$7\overline{)28}$
9.	$6\overline{)48}$	$3\overline{)24}$	$5\overline{)40}$	$9\overline{)36}$	$5\overline{)30}$	$4\overline{)24}$
10.	$8\overline{)56}$	$3\overline{)21}$	$9\overline{)54}$	$8\overline{)40}$	$9\overline{)63}$	$8\overline{)88}$
11.	$5\overline{)45}$	$7\overline{)35}$	$4\overline{)28}$	$6\overline{)42}$	$7\overline{)49}$	$7\overline{)63}$
12.	$4\overline{)36}$	$4\overline{)32}$	$8\overline{)48}$	$7\overline{)42}$	$7\overline{)56}$	$6\overline{)54}$

More Mixed Practice

Give the missing numbers orally:

1.	$12-9=\ ?$	$8+?=17$	$9+3=\ ?$	$?-7=\ 6$
2.	$?+9=13$	$8\times ?=40$	$?\times 5=45$	$16\div ?=\ 4$
3.	$?\div 3=\ 8$	$?-3=\ 8$	$?\times 8=72$	$9\times ?=54$
4.	$?\times 7=49$	$56\div ?=\ 8$	$?\times 7=42$	$9+?=11$
5.	$12-?=\ 8$	$?\div 9=\ 2$	$?-5=\ 7$	$5\times 8=\ ?$
6.	$36\div 9=\ ?$	$9+6=\ ?$	$?\times 3=24$	$?\div 7=\ 9$
7.	$8\times 6=\ ?$	$10-?=\ 9$	$6\times ?=36$	$?-2=\ 9$
8.	$11-8=\ ?$	$?\times 8=64$	$8-?=\ 4$	$56\div 7=\ ?$
9.	$14+9=\ ?$	$?+9=15$	$35\div 7=\ ?$	$6\times ?=54$
10.	$8\times ?=48$	$24\div 8=\ ?$	$27+8=\ ?$	$?-8=\ 5$
11.	$?-9=\ 8$	$8\times 9=\ ?$	$49\div 7=\ ?$	$17+6=\ ?$
12.	$42\div ?=\ 6$	$16-?=\ 8$	$39\div ?=13$	$9\times ?=63$

Copy and subtract:

13.	\$37.52	\$4.93	\$38.50	\$27.34	\$5.83
	14.64	1.67	.94	15.92	3.59

Copy and multiply:

14.	\$9.42	\$4.15	\$9.37	\$8.78	\$6.53
	3	6	7	9	8

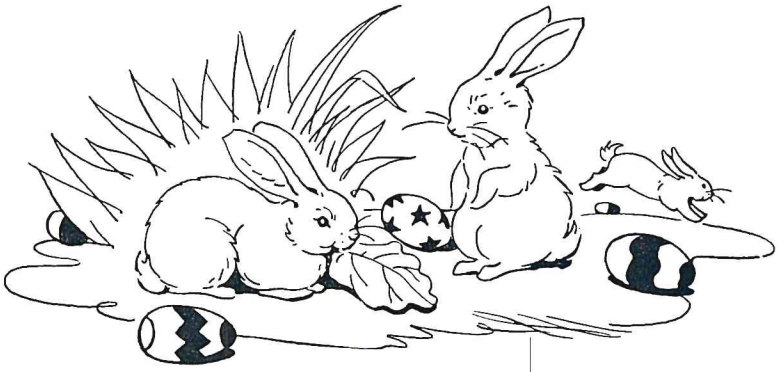
Divide:

15.	6)\$8.94	7)\$4.62	8)\$9.12	9)\$3.69	8)\$5.03

Add:

16.	\$1.84	\$6.65	\$32.73	\$4.87	\$8.22
	9.63	.37	16.55	.37	4.83
	5.37	5.95	4.83	.94	9.98

Finding the Average



1. Aunt Mary asked Jane, Alice, and Helen to come out to the farm and hunt Easter eggs. Alice found 15 eggs, Jane found 14, and Helen found only 7. How many did they find in all?

2. "Jane and I found more than you did, because we have hunted eggs before," said Alice. "It does not matter for we will divide them equally." How many eggs will each girl have if they divide the 36 eggs equally among the three of them?

If the three girls found 36 eggs and they divided them equally, there would be 36 ÷ 3 or 12 for each.

When we make such an equal division, the answer is called an average. We say that the *average* number of eggs found was 12.

3. Frank sold 27 papers on Monday and 21 papers on Tuesday. What was the average number of papers sold for the two days?

4. He sold 12 papers on Wednesday. How many papers did he average for the 3 days? (See Prob. 3.)

5. He sold 25 on Thursday, 23 on Friday, and 18 on Saturday. Find how many papers he sold that week and how many he averaged each day. (See Prob. 3 and 4.)

6. In finding her 15 eggs Alice found 2 eggs in one place, 3 in another, 4 in another, 1 in another, and 5 in still another. In how many places did she find her eggs? What is the average number of eggs she found in each place?

7. Jane found her 14 eggs in 7 different places. What is the average number of eggs she found in each place?

8. When it began to get dark Aunt Mary put 7 rabbits in one house, 6 in another, 4 in another, and 7 in another. Into how many houses did she put the 24 rabbits? What is the average number of rabbits in each house?

9. Prob. 8 tells us that the average number of rabbits in each of the four houses is 6. This means that there are 6 rabbits in each house, if each house has the — number of rabbits in it.

Checking Division Examples

Ex. 2 is a check for Ex. 1. Ex. 4 is a check for Ex. 3, and so on.

Copy and work:

1.	2.	3.	4.	5.	6.
	61		310		53
$6\overline{)366}$	$\underline{\times 6}$	$7\overline{)2170}$	$\underline{\times 7}$	$5\overline{)265}$	$\underline{\times 5}$

7.	8.	9.	10.	11.	12.
$7\overline{)847}$	$\begin{array}{r}121\\ \times 7\\ \hline\end{array}$	$6\overline{)3960}$	$\begin{array}{r}660\\ \times 6\\ \hline\end{array}$	$6\overline{)3966}$	$\begin{array}{r}661\\ \times 6\\ \hline\end{array}$

13.	14.	15.	16.	17.	18.
$3\overline{)2826}$	$\begin{array}{r}942\\ \times 3\\ \hline\end{array}$	$4\overline{)1756}$	$\begin{array}{r}439\\ \times 4\\ \hline\end{array}$	$5\overline{)2745}$	$\begin{array}{r}549\\ \times 5\\ \hline\end{array}$

Checking Multiplication Examples

In this set notice that the examples are in pairs, one being a check for the other. For example, 98 × 76 is a check for 76 × 98.

Multiply:

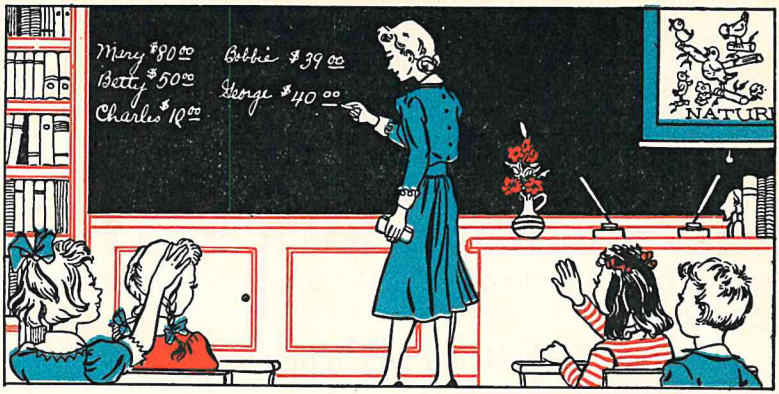
1.		2.		3.	
98	76	84	99	46	78
76	98	99	84	78	46

4.		5.		6.	
88	97	65	89	78	96
97	88	89	65	96	78

7.		8.		9.	
83	76	94	87	86	79
76	83	87	94	79	86

10.		11.		12.	
87	64	93	15	79	47
64	87	15	93	47	79

Estimating How Much Thirty-Nine Books Will Cost



The 39 fourth-grade children each got a new reading book. Each book cost $.97. Miss Martin asked them to estimate how much all the books cost.

1. Mary estimated $80.00. We know this is too much. If the books cost $2.00 each, then 40 of them would cost $80.00. But the books cost only $.97 each, and there are only 39 books.

2. George said, "$1.00 a book is a little more than $.97, and 39 books are fewer than 40 books. So I will think 40 × $1 = $40." He estimated $40.00.

3. Bobbie thought that since $.97 is almost $1.00, he would think 39 × $1 = $39. He could think this, but he could not think 97 × 39 unless he figured it on his paper. So he estimated $39.

4. Figure how much the 39 books cost at $.97 each.

5. If the cost of the 39 books was $37.83, how much more than $36.00 did they cost?

Estimating Answers

It is a good thing to try to think what would be a sensible answer to a problem. You can do this by estimating about what the answer should be. You should get in the habit of doing this.

1. Uncle Henry paid $1.95 a sack for 8 sacks of bran. About how much did the bran cost him? In thinking about the answer to this problem notice that $1.95 is almost $2. Eight sacks at $2 a sack would cost $16. So we know that the bran cost Uncle Henry almost $16.

2. It cost Uncle Henry $98 to buy one horse. About how much would it cost him to buy 2 horses at the same price?

3. Jane's arithmetic book cost $.96. About how much would three such books cost?

4. Uncle Henry told Jimmie that he raised 18 bushels of wheat on an acre last year. About how much would he raise on 4 acres?

5. Jimmie counted the steps to the mail box. He found that there were 197 steps. About how many steps would he take in going to and from the mail box?

6. Uncle Henry feeds his pigs 55 pounds of corn every day. About how many pounds of corn will he feed the pigs in 30 days?

7. George's geography book cost $.95. About how much will 7 books cost at the same price?

8. Mary paid 19¢ for each of 11 dresses for her doll. About how much did she pay for all the dresses? (Think 10 × 20¢ = — .)

How Many Eights in a Number?

We divide by 8 to see how many 8's there are in a number. Count the eights in each column.

8							
8	8						
8	8	8					
8	8	8	8				
8	8	8	8	8			
8	8	8	8	8	8		
8	8	8	8	8	8	8	
8	8	8	8	8	8	8	8
8	8	8	8	8	8	8	8
72	64	56	48	40	32	24	16

Count the 8's in the first column above. How many 8's in 72? There are nine 8's in 72. Count the 8's in the second column above. How many 8's in 64? There are eight 8's in 64.

Make practice cards for these new division facts. Study each fact carefully.

$9\overline{)72}$ = 8	$8\overline{)64}$ = 8	$8\overline{)72}$ = 9

Read, giving the answers orally:

1. Three 8's = 24 $24 \div 8 = ?$ Eight 3's = 24 $24 \div 3 = ?$
2. Nine 8's = 72 $72 \div 8 = ?$ Eight 9's = 72 $72 \div 9 = ?$
3. Two 8's = 16 $16 \div 8 = ?$ Eight 2's = 16 $16 \div 2 = ?$
4. Seven 8's = 56 $56 \div 8 = ?$ Eight 7's = 56 $56 \div 7 = ?$

5.	Four 8's = 32	32 ÷ 8 = ?	Eight 4's = 32	32 ÷ 4 = ?
6.	Six 8's = 48	48 ÷ 8 = ?	Eight 6's = 48	48 ÷ 6 = ?
7.	Five 8's = 40	40 ÷ 8 = ?	Eight 5's = 40	40 ÷ 5 = ?
8.	Nine 8's = 72	72 ÷ 8 = ?	Eight 9's = 72	72 ÷ 9 = ?
9.	Eight 8's = 64	64 ÷ 8 = ?	Eight 1's = 8	8 ÷ 1 = ?

Using Eight in Dividing

Read, giving the answers orally.

1.	24 ÷ 8 = ?	Three 8's + 1 = 25	25 ÷ 8 = three 8's + 1
2.	40 ÷ 8 = ?	Five 8's + 3 = ?	43 ÷ 8 = ?
3.	56 ÷ 8 = ?	Seven 8's + 5 = ?	61 ÷ 8 = ?
4.	72 ÷ 8 = ?	Nine 8's + 7 = ?	79 ÷ 8 = ?

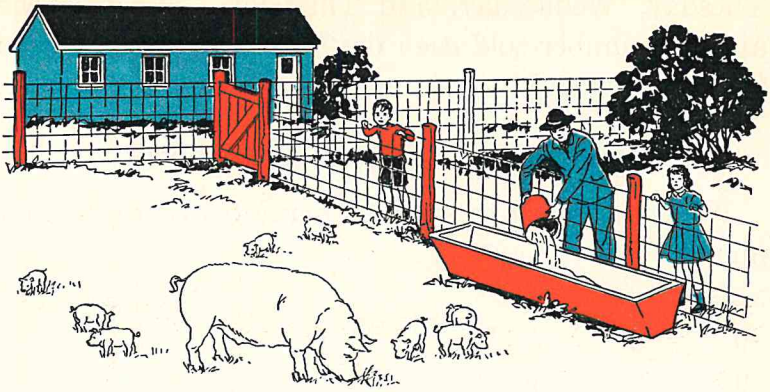
Copy and divide. To check, multiply your answer and the number with which you divided.

5.	8)88	8)96	8)80	8)896	8)920	8)944
6.	8)936	8)968	8)912	8)952	8)904	8)976
7.	8)488	8)384	8)272	8)192	8)368	8)472
8.	8)536	8)336	8)224	8)760	8)688	8)352

Copy, divide, and check. Remember to add the remainders when you check.

9.	8)257	8)185	8)358	8)742	8)419	8)653
10.	8)506	8)585	8)207	8)274	8)773	8)373
11.	8)459	8)521	8)694	8)620	8)297	8)230
12.	8)399	8)782	8)466	8)715	8)553	8)638
13.	8)7488	8)1760	8)7056	8)2652	8)6280	
14.	8)3576	8)5192	8)4656	8)4850	8)7848	

Pigs in a Pen



Uncle Henry has 600 little pigs that are one, two, three, four, five, and six weeks old. He wants to put all of them in small pens with a mother pig in each pen.

1. How many pens will he need if he puts 8 baby pigs in each pen?

2. How many pens will it take for the 168 pigs that are a week old? (8 pigs in a pen.)

3. Seventy-two pigs are two weeks old. How many pens will it take for these pigs? (See Prob. 2.)

4. Uncle Henry has 104 pigs that are three weeks old and 120 that are four weeks old. How many little pigs does he have that are three and four weeks old?

5. How many pens will it take for each group of pigs in Prob. 4? (8 pigs in a pen.)

6. Of 600 pigs, 136 are either five or six weeks old. All the others are younger. How many pigs are younger?

7. Uncle Henry sold 120 pigs altogether on Monday, Tuesday, Wednesday, and Thursday. What is the average number sold each day? What did you do to find the average?

How Many Nines in a Number?

We divide by 9 to see how many 9's there are in a number.

9							
9	9						
9	9	9					
9	9	9	9				
9	9	9	9	9			
9	9	9	9	9	9		
9	9	9	9	9	9	9	
9	9	9	9	9	9	9	9
9	9	9	9	9	9	9	9
81	72	63	54	45	36	27	18

1. Count the 9's in the first column. Are there nine 9's? What is their sum? How many 9's are there in 81?

2. Count the 9's in the second column. Are there eight 9's? What is their sum? How many 9's in 72?

3. Count the number of 9's in each of the other columns and tell the number of 9's in 63; in 54; in 45; in 36; in 27; in 18.

9 9)81

This is a new division fact in dividing by 9. Make a practice card for it and study it carefully.

Read, giving the answers to the questions orally:

1.	Eight 9's = 72	72 ÷ 9 = ?	Nine 8's = 72	72 ÷ 8 = ?
2.	Three 9's = 27	27 ÷ 9 = ?	Nine 3's = 27	27 ÷ 3 = ?
3.	Six 9's = 54	54 ÷ 9 = ?	Nine 6's = 54	54 ÷ 6 = ?
4.	Two 9's = 18	18 ÷ 9 = ?	Nine 2's = 18	18 ÷ 2 = ?
5.	Four 9's = 36	36 ÷ 9 = ?	Nine 4's = 36	36 ÷ 4 = ?
6.	Five 9's = 45	45 ÷ 9 = ?	Nine 5's = 45	45 ÷ 5 = ?
7.	Seven 9's = 63	63 ÷ 9 = ?	Nine 7's = 63	63 ÷ 7 = ?

Answer orally:

8.	18 ÷ 9 = ?	Two 9's + 6 = ?	24 ÷ 9 = ?
9.	36 ÷ 9 = ?	Four 9's + 5 = ?	41 ÷ 9 = ?
10.	27 ÷ 9 = ?	Three 9's + 2 = ?	29 ÷ 9 = ?
11.	45 ÷ 9 = ?	Five 9's + 4 = ?	49 ÷ 9 = ?
12.	63 ÷ 9 = ?	Seven 9's + 8 = ?	71 ÷ 9 = ?
13.	54 ÷ 9 = ?	Six 9's + 3 = ?	57 ÷ 9 = ?
14.	81 ÷ 9 = ?	Nine 9's + 7 = ?	88 ÷ 9 = ?
15.	72 ÷ 9 = ?	Eight 9's + 6 = ?	78 ÷ 9 = ?

Copy and divide:

16.	$9\overline{)108}$	$9\overline{)117}$	$9\overline{)135}$	$9\overline{)170}$
17.	$9\overline{)189}$	$9\overline{)153}$	$9\overline{)389}$	$9\overline{)198}$
18.	$9\overline{)207}$	$9\overline{)216}$	$9\overline{)234}$	$9\overline{)225}$

Using Nine in Dividing

Read, giving the answers to the questions orally:

1.	27 ÷ 9 = ?	Three 9's + 2 = 29	29 ÷ 9 = three 9's + 2
2.	9 ÷ 9 = ?	One 9 + 1 = ?	10 ÷ 9 = ?
3.	63 ÷ 9 = ?	Seven 9's + 5 = ?	68 ÷ 9 = ?
4.	81 ÷ 9 = ?	Nine 9's + 7 = ?	88 ÷ 9 = ?

Copy and divide. To check, multiply the answer and the number by which you divided.

5. $9\overline{)99}$ $9\overline{)990}$ $9\overline{)900}$ $9\overline{)540}$ $9\overline{)369}$ $9\overline{)270}$

6. $9\overline{)189}$ $9\overline{)459}$ $9\overline{)360}$ $9\overline{)639}$ $9\overline{)729}$ $9\overline{)279}$

7. $9\overline{)549}$ $9\overline{)630}$ $9\overline{)414}$ $9\overline{)567}$ $9\overline{)198}$ $9\overline{)432}$

8. $9\overline{)306}$ $9\overline{)837}$ $9\overline{)234}$ $9\overline{)288}$ $9\overline{)765}$ $9\overline{)657}$

Copy, divide, and check. Remember to add the remainders when you check.

9. $9\overline{)838}$ $9\overline{)257}$ $9\overline{)577}$ $9\overline{)795}$ $9\overline{)218}$ $9\overline{)704}$

10. $9\overline{)593}$ $9\overline{)517}$ $9\overline{)353}$ $9\overline{)237}$ $9\overline{)757}$ $9\overline{)331}$

11. $9\overline{)508}$ $9\overline{)446}$ $9\overline{)679}$ $9\overline{)748}$ $9\overline{)624}$ $9\overline{)698}$

12. $9\overline{)473}$ $9\overline{)376}$ $9\overline{)895}$ $9\overline{)878}$ $9\overline{)317}$ $9\overline{)403}$

13. $9\overline{)2248}$ $9\overline{)8073}$ $9\overline{)6624}$ $9\overline{)8478}$ $9\overline{)5247}$

14. $9\overline{)8622}$ $9\overline{)2943}$ $9\overline{)7677}$ $9\overline{)6066}$ $9\overline{)2682}$

15. $9\overline{)3465}$ $9\overline{)6534}$ $9\overline{)3942}$ $9\overline{)6795}$ $9\overline{)4178}$

16. $9\overline{)5895}$ $9\overline{)2547}$ $9\overline{)3222}$ $9\overline{)4833}$ $9\overline{)4347}$

Chickens on the Farm

1. Aunt Mary had 785 chickens before she gave two chickens to Jane and Jimmie to take home with them. How many does she have now?

2. Aunt Mary has the same number of chickens of each kind. If she has 9 kinds and 783 chickens, how many does she have of each kind?

3. She has some of the chickens in small yards. She has 15 in one yard, 29 in another, 38 in another, 27 in another, 78 in another, 49 in another, 50 in another, 37 in another, and 28 in another. In how many yards does she have chickens? How many chickens does she have in these yards?

4. She wants to put 135 chickens in 9 yards, the same number in each. How many will she have in each yard?

5. In a yard that has 15 chickens, $\frac{1}{3}$ of them are red, and $\frac{1}{5}$ of them are white. How many are red? How many are white?

Review Practice

Add. Use an answer sheet.

1.	67	78	94	25	46	83
	86	99	47	86	49	27
	75	68	91	28	47	89
	57	80	93	38	59	77

2.	387	674	907	567	516	278
	364	486	987	700	698	191
	465	678	599	187	809	977
	465	487	499	386	371	645

3.	9760	6587	8109	8165	9445
	4861	4750	6759	4865	3910
	6774	4119	3576	4188	3645

Copy and multiply. Check the answers.

4.	463	645	976	597	415	776
	45	69	38	83	61	75

5.	726	375	730	178	866	584
	34	85	62	47	84	77

6.	465	697	210	764	839	296
	57	38	75	20	58	38

7.	766	584	386	255	674	177
	78	55	84	44	78	68

Subtract and check. Use an answer sheet.

8.	4563	3876	9814	6758	4351	7564
	3116	2768	5688	4756	2987	4103
9.	3756	7586	2736	4765	5764	6102
	3198	4870	987	264	1674	3295
10.	7438	8449	9876	6789	1224	5643
	6241	7354	4585	5498	304	2734
11.	3784	2950	7860	8970	7680	4630
	1257	1760	5949	4786	6943	3287

Obeying the Signs

Find the answers to these. Do what the signs tell you to do.

1.	2.	3.	4.
$344 \div 8$	$765 - 386$	$217 + 864$	384×58
5.	**6.**	**7.**	**8.**
$824 + 376$	$5\overline{)655}$	483×66	$856 - 277$
9.	**10.**	**11.**	**12.**
$\$2.27 \times 5$	$\$6.48 - 3.92$	$7\overline{)\$9.45}$	$\$7.65 + 8.33$
13.	**14.**	**15.**	**16.**
$59 \div 3$	$\$.08 + \$.97$	$\$6.55 - \$.30$	$6 \times \$4.90$

Solving Two-Step Problems

You must take a second step in doing many arithmetic problems. This problem has two steps.

Problem: Aunt Mary sold 6 of her chickens at \$.70 each. The man who bought them gave her a \$5.00 bill. How much change should she give him?

First Step:

a. Find out how much the man owed Aunt Mary for the chickens.

$$\begin{array}{r} \$.70 \\ \times 6 \\ \hline \$4.20 \end{array}$$

Second Step:

b. Find the difference between \$5.00 and \$4.20.

$$\begin{array}{r} \$5.00 \\ -4.20 \\ \hline \$\ .80 \end{array}$$

Aunt Mary should give the man \$.80 change.

Problem: Mr. Brown paid 25¢ each for 8 little chickens and \$2.80 for a bag of chicken feed. How much did the chickens and feed cost him?

One chicken cost 25¢.
8 chickens cost \$2.00.
Feed cost \$2.80.
Cost of both, \$2.00 + \$2.80 = \$4.80.
\$4.80 is the cost of the chickens and the feed.

$$\begin{array}{r} 25 \\ \times 8 \\ \hline 200 \end{array}$$

$$\begin{array}{r} \$2.00 \\ +2.80 \\ \hline \$4.80 \end{array}$$

1. Aunt Mary sold 7 little ducks for $.50 each. At the same time she bought $4.55 worth of chicken feed. How much more did the feed cost than the amount she received for the ducks?

a. What is the first step in this problem?

b. What is the second step in this problem?

2. Aunt Mary sold 9 little chickens at the store for $.60 each. The clerk gave her some things in the store, instead of money, in payment for the chickens. The things he gave her cost $4.63. How much money did the clerk owe her?

3. At the feed store Aunt Mary bought 9 bags of feed that cost $1.87 each. She also bought a box of feed to make her hens lay better. It cost $.90. How much did she spend for feed?

4. One afternoon Jane helped Aunt Mary gather eggs. Jane found 8 eggs in each of 9 nests. Then Aunt Mary gave her 19 more. How many eggs did Jane have then?

5. Jimmie found 36 eggs in 9 nests. There were the same number of eggs in each nest. If he left one egg in each, how many eggs did he take out of each nest?

6. Aunt Mary sold $2.25 worth of eggs on Monday, $3.00 worth Tuesday, $2.50 worth Wednesday, $2.39 worth Thursday, $3.12 worth Friday, and $1.98 worth Saturday. How much of her egg money did she have left after she had spent $4.15?

7. Uncle Henry and Aunt Mary each eat two eggs for breakfast. Jane and Jimmie each eat one. How many eggs do all of them eat each week for breakfast?

Review in Addition, Subtraction, and Multiplication

Add. Write your answers on an answer sheet.

1.	2.	3.	4.	5.
987	908	87	6789	6758
654	786	93	5437	8659
29	475	58	8900	5009
68	657	36	7967	600
876	859	50		
		80		

Subtract on an answer sheet:

6.	7.	8.	9.	10.
8790	1986	9805	2984	7689
6486	698	6926	1095	3796

Copy and multiply:

11.	12.	13.	14.	15.
126	79	897	987	779
89	68	46	68	89

16.	17.	18.	19.	20.
$1.98	67	34	78	79
67	98	78	34	86
13 86				
118 8				
$132.66				

21.	22.	23.	24.
$1.86	$ .87	$2.98	$ .89
24	69	67	89

Copy and multiply:

25.	26.	27.	28.	29.
$4.99	$ .78	$5.46	$ .58	$2.68
87	64	87	34	47

Add. Use an answer sheet.

30.	31.	32.	33.
956	835	3846	$64.43
378	785	278	7.82
255	598	9359	4.59
674	38	67	37.29
819	96	40	.88

34.	35.	36.	37.
8976	7432	5876	9545
2431	557	488	8336
986	824	543	7482
1867	941	817	9865

Subtract. Use an answer sheet.

38.	3752	6437	4765	6892	8643
	2518	5982	3972	2795	7685
39.	5584	3972	6548	3943	4761
	4287	1698	3488	1672	958
40.	8345	9697	3884	5789	3463
	3266	5143	2427	2539	1678

The Gold-Fish Farm

1. One Saturday afternoon Father took Mother, Jane, and Jimmie 15 miles out in the country to a place called "The Gold-Fish Farm." It took them 30 minutes to drive the 15 miles to the farm and 30 minutes to drive home. How many minutes were they gone if they spent 60 minutes at the farm?

2. There are many kinds of gold fish at this farm. The fish are in 9 different pools. Mr. Lee, who owns the farm, took Father, Mother, Jane, and Jimmie to see all the pools. There are 6,120 fish in all the pools. How many fish are there, on an average, in each pool?

3. There are 8 different kinds of fish in one of the pools. If this pool has 680 fish and if there is the same number of fish of each kind, how many fish of each kind are in this pool?

4. Jane threw 3 crackers into the pool, and 27 fish came to the top to eat them. This is one cracker for how many fish?

5. The blue fish are 5 for a quarter. Jane handed Mr. Lee a dime for one of them. How much change did he give her?

6. At 5 blue fish for a quarter, how many can Jane buy for $.50?

7. Mr. Lee wants to put the 210 blue fish in a number of smaller pools where they will have more room. If he puts them in 7 pools and puts 5 extra gold fish in each, how many fish will he have in each pool?

8. The gold fish are 5 for a half dollar. Jimmie gave Mr. Lee a quarter for one of them. How much change did Mr. Lee give Jimmie?

9. At 5 for a half dollar, how much will 8 gold fish cost?

10. How much will six gold fish cost at the price in Prob. 8?

11. Mother likes the gold fish and the purple fish. The purple fish are 3 for 15¢. Gold fish are 10¢ each. How much should she pay Mr. Lee for 1 purple fish and 1 gold fish.

12. At 3 for 15¢ how many purple fish can Mother buy for a quarter?

13. Father likes the red fish. They are 9 for 72¢. The blue fish are 5¢ each. How much more does a red fish cost than a blue fish?

14. At 9 for 72¢, how many red fish can Father buy for $.80?

15. Jane, Jimmie, Father, and Mother bought 36 fish in all. What was the average number bought by each of them?

Review

Copy and divide:

1.	2)196	3)245	4)456	5)657	6)980
2.	2)1890	3)2567	4)3567	5)3789	6)5678
3.	2)2456	3)4674	4)6780	5)7840	6)7869
4.	7)1478	8)1980	9)2890	8)1789	7)1561
5.	9)1090	8)9789	7)8694	6)9846	8)9459

In these examples remember to place the cents' point in the answer above the cents' point in the number being divided:

6.	2)$.48	3)$6.45	4)$12.68	5)$67.80
7.	6)$56.88	7)$56.77	8)$89.76	9)$78.93
8.	6)$66.78	7)$87.92	8)$27.84	9)$56.97
9.	8)$79.04	6)$67.86	7)$49.70	4)$36.48
10.	9)$76.86	7)$6.86	6)$.66	7)$78.82

Notice how the same numbers are used in these examples:

11.	98	76	9876	7698
	×76	×98	−7698	+2178
12.	89	74	8974	7489
	×74	×89	−7489	+1485
13.	78	46	7846	4678
	×46	×78	−4678	+3168

14.	53	49	5349	4953
	$\times 49$	$\times 53$	-4953	$+396$

15. The answer to the first part of Ex. 14 is —.

The answer to the second part of Ex. 14 is —.

If both examples are solved correctly, will both answers be the same?

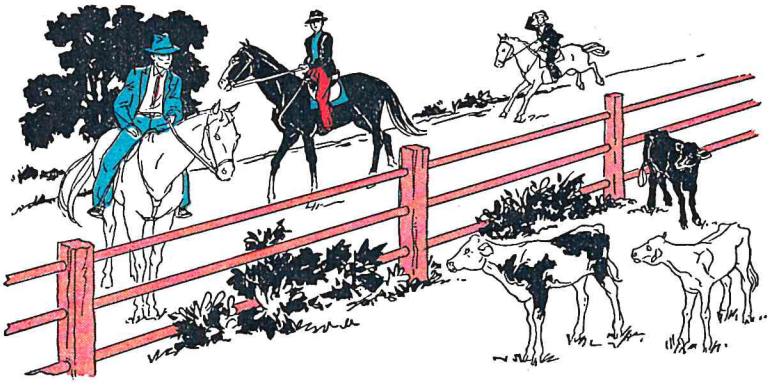
Review of Number Facts That Need More Study

These number facts are some of the most difficult. Give the answer orally to each as quickly as you can.

1.	$9 + 8 =$	$17 - 9 =$	$8 + 7 =$	$15 - 6 =$
2.	$7 + 6 =$	$18 - 9 =$	$6 + 7 =$	$17 - 8 =$
3.	$6 \times 9 =$	$54 \div 6 =$	$7 \times 8 =$	$56 \div 7 =$
4.	$7 \times 6 =$	$42 \div 7 =$	$8 \times 6 =$	$48 \div 8 =$
5.	$4 \times 8 =$	$32 \div 4 =$	$4 \times 9 =$	$36 \div 4 =$
6.	$7 \times 9 =$	$63 \div 7 =$	$7 \times 7 =$	$49 \div 7 =$
7.	$6 \times 7 =$	$42 \div 6 =$	$4 \times 7 =$	$28 \div 4 =$
8.	$7 \times 5 =$	$35 \div 7 =$	$5 \times 9 =$	$45 \div 5 =$
9.	$8 \times 8 =$	$64 \div 8 =$	$9 \times 7 =$	$63 \div 9 =$
10.	$8 \times 5 =$	$40 \div 8 =$	$9 \times 6 =$	$54 \div 9 =$
11.	$3 \times 9 =$	$27 \div 3 =$	$8 \times 7 =$	$56 \div 8 =$
12.	$4 \times 6 =$	$24 \div 4 =$	$5 \times 6 =$	$30 \div 5 =$
13.	$9 \times 4 =$	$36 \div 9 =$	$5 \times 8 =$	$40 \div 5 =$
14.	$3 \times 8 =$	$24 \div 3 =$	$6 \times 8 =$	$48 \div 6 =$
15.	$7 \times 4 =$	$28 \div 7 =$	$6 \times 6 =$	$36 \div 6 =$
16.	$9 \times 5 =$	$45 \div 9 =$	$8 \times 9 =$	$72 \div 8 =$
17.	$3 \times 6 =$	$18 \div 3 =$	$8 \times 3 =$	$24 \div 8 =$
18.	$4 \times 4 =$	$16 \div 4 =$	$8 \times 4 =$	$32 \div 8 =$
19.	$9 \times 8 =$	$72 \div 9 =$	$4 \times 3 =$	$12 \div 4 =$

20.	$5 \times 7 =$	$35 \div 5 =$	$9 \times 3 =$	$27 \div 9 =$
21.	$4 \times 5 =$	$20 \div 4 =$	$3 \times 7 =$	$21 \div 3 =$
22.	$6 \times 4 =$	$24 \div 6 =$	$6 \times 3 =$	$18 \div 6 =$
23.	$9 + 4 =$	$12 - 7 =$	$5 + 8 =$	$13 - 5 =$
24.	$7 + 7 =$	$15 - 9 =$	$8 + 6 =$	$13 - 4 =$

Uncle Henry's Calves



1. Uncle Henry raises calves on his farm and sells them. He, Father, and Jimmie are riding out into the pasture to see how the calves are getting along. Jimmie is riding a pony that Uncle Henry keeps on his farm. Uncle Henry has 128 calves. How many more will he have to buy so that he will have 152?

2. Uncle Henry bought these 24 calves at $17.00 each. He paid $19.00 to have them brought to his farm on a truck. How much did the calves cost him in all?

3. When Uncle Henry, Father, and Jimmie reached the calves, 19 of the 152 calves were drinking from the

creek. How many of the calves were not drinking from the creek?

4. One-half of the 128 calves are red. All of the 24 calves that he bought are red. How many red calves does he have?

5. One hundred nineteen of Uncle Henry's 152 calves were raised on his own farm. How many of his calves were not raised on his own farm?

6. Uncle Henry is ready to take some of his calves to town on his truck and sell them. He can take 9 calves in each load. He asked Jimmie how many calves he could take to town in 8 loads if he took an extra calf in the last load. Can you tell him how many he can take?

7. It takes Uncle Henry 15 minutes to drive in his truck from his house to where he sells the calves. How many minutes does it take him to take a load of calves to town and get back home if it takes 30 minutes to unload the calves?

8. One day when Uncle Henry's truck was broken he had Mr. Smith take 9 calves to town for him. Mr. Smith received $180.00 for the calves. How much did he give to Uncle Henry for each calf if he kept $.50 for hauling each one?

9. Jimmie went with Uncle Henry to take a truck load of calves to town. The 9 calves weighed, on an average, 350 pounds each. Jimmie asked Uncle Henry how much the calves and truck weighed if the truck weighed 2,400 pounds. Answer this question for Jimmie.

10. On the way home Jimmie bought some candy and chewing gum when Uncle Henry stopped to buy gasoline. How much did he pay for 3 pieces of candy at 5¢ each and a 5¢ package of chewing gum?

11. If Uncle Henry bought 5 gallons of gasoline at 20 cents a gallon, how much did he pay for it?

12. Uncle Henry had the oil in his truck changed. He bought six quarts of oil at 15¢ a quart. How much did the oil cost? How much did the oil and gasoline together cost? (See Prob. 11.)

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Find the average of several numbers.
2. Estimate whether an answer in addition, subtraction, or multiplication is very much too large or small.
3. Use the new division facts given in this chapter.
4. Tell how many 8's or how many 9's there are in a number.
5. Do problems using 8's or 9's in division.
6. Solve problems that have two steps.
7. Estimate the cost of a number of articles.

Are You Ready for the Next Chapter?

1. If you can do tests 26-31 without making errors, you may omit the Remedial Practice (Sets 26-31) and study pages 283-285.

2. If you make errors on the tests, study the examples you do not know on the pages shown in **heavy type.**

Diagnostic Test No. 26: Division 207

1.	$7\overline{)49}$	$7\overline{)56}$	$6\overline{)48}$	$8\overline{)32}$	$6\overline{)54}$	$3\overline{)27}$
2.	$6\overline{)42}$	$4\overline{)32}$	$9\overline{)18}$	$2\overline{)16}$	$9\overline{)45}$	$8\overline{)48}$
3.	$8\overline{)56}$	$5\overline{)45}$	$4\overline{)36}$	$9\overline{)63}$	$9\overline{)27}$	$9\overline{)36}$
4.	$7\overline{)42}$	$8\overline{)40}$	$9\overline{)72}$	$9\overline{)54}$	$5\overline{)40}$	$3\overline{)24}$
5.	$8\overline{)24}$	$9\overline{)81}$	$6\overline{)18}$	$8\overline{)64}$	$8\overline{)72}$	$7\overline{)28}$

Diagnostic Test No. 27: Division 207

1.	$8\overline{)248}$	$9\overline{)549}$	$8\overline{)328}$	$9\overline{)729}$	$8\overline{)648}$
2.	$9\overline{)360}$	$8\overline{)408}$	$9\overline{)639}$	$8\overline{)160}$	$9\overline{)90}$
3.	$8\overline{)88}$	$9\overline{)270}$	$8\overline{)240}$	$9\overline{)369}$	$8\overline{)480}$
4.	$9\overline{)459}$	$8\overline{)568}$	$9\overline{)810}$	$8\overline{)720}$	$9\overline{)189}$

Diagnostic Test No. 28: Division 208

1.	$8\overline{)256}$	$9\overline{)567}$	$8\overline{)336}$	$9\overline{)756}$	$8\overline{)640}$
2.	$9\overline{)378}$	$8\overline{)456}$	$9\overline{)657}$	$8\overline{)184}$	$9\overline{)108}$
3.	$8\overline{)96}$	$9\overline{)297}$	$8\overline{)264}$	$9\overline{)387}$	$8\overline{)472}$
4.	$9\overline{)477}$	$8\overline{)736}$	$9\overline{)837}$	$8\overline{)752}$	$9\overline{)180}$

Diagnostic Test No. 29: Division **208**

1.	6)67	7)148	6)189	7)78	6)128
2.	7)288	6)247	7)429	6)368	7)218
3.	6)487	7)498	6)309	7)357	6)427
4.	7)638	6)547	7)568	6)568	7)459

Diagnostic Test No. 30: Division **208**

1.	3)346	4)1651	3)963	3)682	4)491
2.	4)2051	4)860	3)1572	4)1248	3)1267
3.	4)2892	3)2176	4)3673	3)1884	4)2461
4.	3)2970	4)2904	3)2472	4)2706	3)2782

Diagnostic Test No. 31: Problems **208-209**

1. Ralph bought 9 candy Easter eggs at the candy store. They were 4¢ each. He gave the clerk a half dollar. How much change should he get?

2. Mr. Brown bought 10 gallons of gasoline at 24¢ a gallon. How much did he pay for the gasoline?

3. After gasoline had been pumped into the tank of a car, the pump showed $1.20. If gasoline is 24¢ per gallon, did the gas man put 5 gallons in the tank? Why?

4. A car used 5 gallons of gasoline in going 45 miles. How many miles did it average on each gallon?

5. On Monday Mr. Davis drove 67 miles; Tuesday, 19 miles; and Wednesday, 37 miles. How many miles did he drive altogether?

6. What was the average number of miles that he drove each day? (See Prob. 5.)

Remedial Practice in Dividing (Sets 26-30)

Set 26

1.	7	8	8	4	9	9
	7)49	7)56	6)48	8)32	6)54	3)27
2.	7	8	2	8	5	6
	6)42	4)32	9)18	2)16	9)45	8)48
3.	7	9	9	7	3	4
	8)56	5)45	4)36	9)63	9)27	9)36
4.	6	5	8	6	8	8
	7)42	8)40	9)72	9)54	5)40	3)24
5.	3	9	3	8	9	4
	8)24	9)81	6)18	8)64	8)72	7)28

Set 27

1.	31	61	41	81	81
	8)248	9)549	8)328	9)729	8)648
	24	54	32	72	64
	8	9	8	9	8
	8	9	8	9	8

Set 28

	32	63	42	84	80
1.	8)256	9)567	8)336	9)756	8)640
	24	54	32	72	64
	16	27	16	36	0
	16	27	16	36	0

Set 29

	11	21	31	11	21
1.	6)67	7)148	6)189	7)78	6)128
	6	14	18	7	12
	7	8	9	8	8
	6	7	6	7	6
	1	1	3	1	2

Set 30

	115	412	321	227	122
1.	3)346	4)1651	3)963	3)682	4)491
	3	16	9	6	4
	4	5	6	8	9
	3	4	6	6	8
	16	11	3	22	11
	15	8	3	21	8
	1	3		1	3

Remedial Practice in Solving Problems (Set 31)

1. Ralph bought 9 candy Easter eggs at the candy store. They were 4¢ each. He gave the clerk a half dollar. How much change should he get?

First, we are told that:

Ralph bought 9 candy Easter eggs.

The eggs were 4¢ each.

He gave the clerk a half dollar ($.50).

Second, we are asked:

How much change should Ralph get?

Third, see whether to add, subtract, multiply, or divide:

$9 \times 4¢ = 36¢$	$\begin{array}{r} 4¢ \\ \times 9 \\ \hline 36¢ \end{array}$
Nine eggs cost 36¢.	
$50¢ - 36¢ = 14¢$	$\begin{array}{r} 50¢ \\ -36¢ \\ \hline 14¢ \end{array}$
Ralph should get 14¢ change.	

2. Mr. Brown bought 10 gallons of gasoline at 24¢ a gallon. How much did he pay for the gasoline?

10 gallons of gasoline at 24¢ a gallon.

How much did the gasoline cost?

$10 \times 24¢ = 240¢$, or $2.40.

He paid $2.40 for the gasoline.

3. (Problem 6). What was the average number of miles that he drove each day?

$67 + 19 + 37 = 123$. $123 \div 3 = 41$, the average.

Improvement Test No. 6

1. David wants to build a house for his dog. He needs 3 boards each 3 feet long for one side. He has a board 14 feet long. How many feet will be left over when he saws 3 boards each 3 feet long out of it?

2. For the other side of the house he also needs 3 boards each 3 feet long. He has a board 6 feet long. How many more feet does he need?

3. How many feet of boards does he have for the back if he has 2 boards each 6 feet long?

4. For the floor he needs 4 boards each 3 feet long. He has a board 15 feet long. How many feet will be left when he saws the 4 boards out of it?

5. The boards for each of two sides cost $.37; the boards for the back cost $.25. How much did all these boards cost?

6. He bought 2 pounds of nails at 5¢ a pound. How much change did the clerk give him out of $.25?

7. He spent $.38 for the front and $.43 for the roof. How much less than $2.00 did these cost altogether?

8. How much did the front and back cost? (See Prob. 5 and 7.)

9. What was the average cost of each of the two sides, the front, back, and roof if they cost $1.80 in all?

10. What is the average cost of one side and the back? (See Prob. 5.)

Were you in the hard-workers' group in this chapter?

Scores

	Hard-workers
0 1 2 3 4 5 6 7	8 9 10

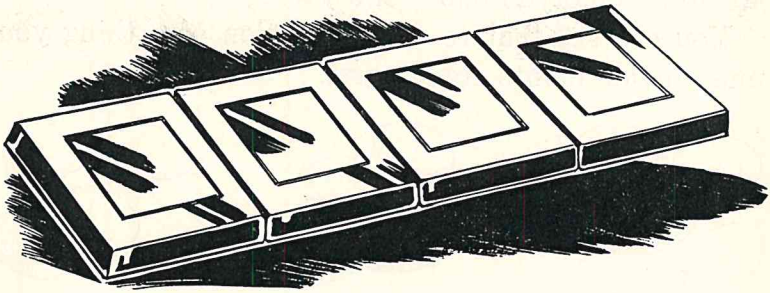
CHAPTER 7

MORE ABOUT FRACTIONS

Using Fractions

One day Jane brought a large chocolate bar to school. She found that it was so made that she could easily break it into four equal parts. She broke the bar into four equal parts and shared them equally with Jean, Alice, and Betty.

> **A part of anything is called a fraction.**
> **When anything is divided into four equal parts each equal part is called one-fourth.**
> **The fraction one-fourth is written $\frac{1}{4}$.**

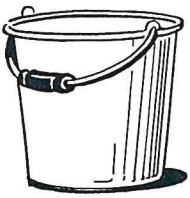


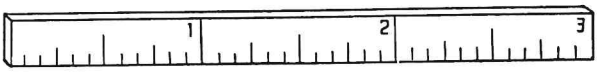
The next day Jean said, "I have some candy for us today." She took out four small candy bars and gave one each to Jane, Alice, and Betty.

Each of the small candy bars is $\frac{1}{4}$ of 4 bars.

Write these fractions:

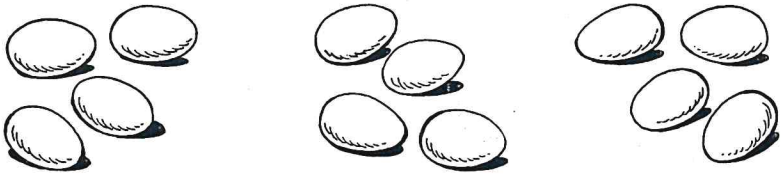
1. one-fourth	one-eighth	one-third
2. one-sixth	one-fifth	one-half





1. How would you find $\frac{1}{2}$ of an apple?
2. How would you find $\frac{1}{3}$ of a cake?
3. How would you find $\frac{1}{4}$ of a gallon?
4. How would you find $\frac{1}{3}$ of a yard?

You can see that to find a fraction of a thing you must divide it into equal parts.



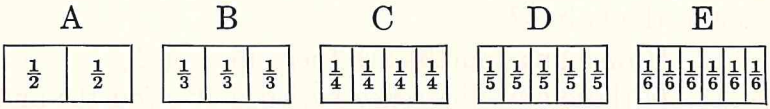
5. How many eggs is $\frac{1}{3}$ of a dozen eggs? You can see by the picture that $\frac{1}{3}$ of 12 is 4. $12 \div 3 = 4$.

6. By what number would you divide 12 to find $\frac{1}{4}$ of a dozen eggs? To find $\frac{1}{6}$ of a dozen eggs?

Give answers orally:

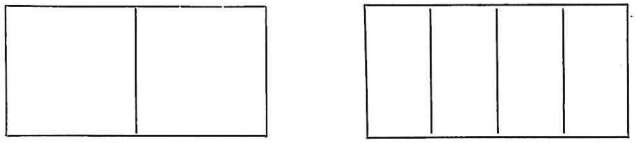
7. $\frac{1}{2}$ of 6 books =
8. $\frac{1}{8}$ of 24 marbles =
9. $\frac{1}{5}$ of 25 stones =
10. $\frac{1}{3}$ of 27 pictures =
11. $\frac{1}{4}$ of 8 blocks =
12. $\frac{1}{6}$ of 12 bushels =
13. $\frac{1}{3}$ of 21 horses =
14. $\frac{1}{4}$ of 40 people =
15. $\frac{1}{6}$ of 18 hats =
16. $\frac{1}{2}$ of 20 cows =
17. $\frac{1}{5}$ of 30 days =
18. $\frac{1}{8}$ of 48 years =

Comparing Fractions



Above there are five figures of equal size. Each figure is divided into equal parts.

1. Figure A is divided into halves.
2. Figure B is divided into —.
3. Figure C is divided into —.
4. Figure D is divided into —.
5. Figure E is divided into —.
6. Which is larger $\frac{1}{2}$ of the figure or $\frac{1}{6}$ of it?
7. Is $\frac{1}{4}$ of the figure larger than $\frac{1}{5}$ of it?
8. Which is larger $\frac{1}{3}$ of the figure or $\frac{1}{6}$ of it?
9. Which is larger $\frac{1}{4}$ of the figure or $\frac{1}{3}$ of it?
10. Which is larger $\frac{1}{2}$ of the figure or $\frac{1}{3}$ of it?
11. Which is larger, $\frac{1}{5}$ of the figure or $\frac{1}{6}$ of it?



12. Take two pieces of paper of the same size. Fold the first one exactly in the center. The part on each side of the fold will be $\frac{1}{2}$ of the paper.

Fold the second piece the same way and then fold each half again. The paper will now have four equal parts, and each part will be $\frac{1}{4}$ of the paper.

Cut out these halves and fourths and see how much larger the halves are than the fourths.

13. How many of the fourths does it take to equal one of the halves?

14. How many fourths are there in a pie?

15. Is there any difference between two-fourths and one-half of the same pie?

16. How many halves are there in a cake?

17. How many thirds are there in a cake?

18. Which would you rather have $\frac{1}{2}$ of a cake or $\frac{1}{3}$ of the same cake?

Practice with Fractions

Find $\frac{1}{2}$ of each of these numbers:

1.	24	6	12	50	32	78
2.	144	236	114	100	650	288

Find $\frac{1}{3}$ of each of these numbers:

3.	63	45	18	90	75	84
4.	147	225	633	528	756	924

Find $\frac{1}{4}$ of each of these numbers:

5.	48	84	96	76	108	244
6.	820	632	452	736	584	672

Find $\frac{1}{5}$ of each of these numbers:

7.	85	90	100	55	75	60
8.	150	235	640	485	295	940

Find $\frac{1}{6}$ of each of these numbers:

9.	66	72	84	90	162	360
10.	486	396	534	762	714	954

Find $\frac{1}{8}$ of each of these numbers:

11.	88	96	136	184	176	192
12.	344	656	824	448	776	592

Give the answers to these examples orally:

13. $\frac{1}{2}$ of a doz. things = — things.
14. $\frac{1}{3}$ of a ft. = — inches.
15. $\frac{1}{2}$ of a lb. = — oz.
16. $\frac{1}{4}$ of a bu. = — pk.
17. $\frac{1}{3}$ of a yr. = — mo.
18. $\frac{1}{4}$ of a da. = — hr.
19. $\frac{1}{2}$ of a gal. = — qt.
20. $\frac{1}{3}$ of an hr. = — min.
21. $\frac{1}{2}$ of a T. = — lb.

More Roman Numerals

You have already learned to read and write the Roman numerals I through XII. Here are the numerals from I to X. Read each one and then write them several times.

1	2	3	4	5	6	7	8	9	10
I	II	III	IV	V	VI	VII	VIII	IX	X

In writing the Roman numerals from 11 to 20 we simply put X in front of the numbers from I to X.

$11 = 10 + 1$. 11 is written XI.
$15 = 10 + 5$. 15 is written XV.

1. Write the Roman numerals from 11 through 20.

In the same way the numerals from 21 to 30 are written by adding XX in front of the numbers from I to X.

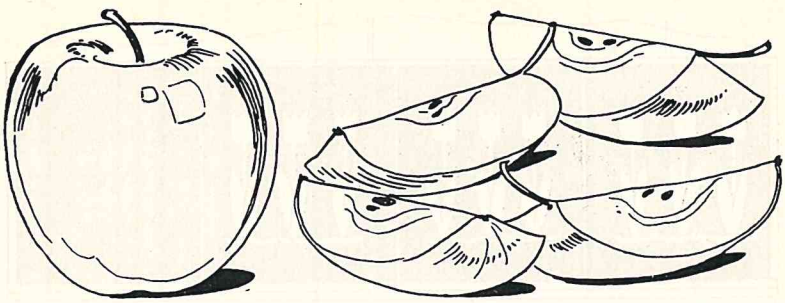
$21 = 20 + 1$. 21 is written XXI.
$29 = 20 + 9$. 29 is written XXIX.

2. Write the Roman numerals from 21 through 30.

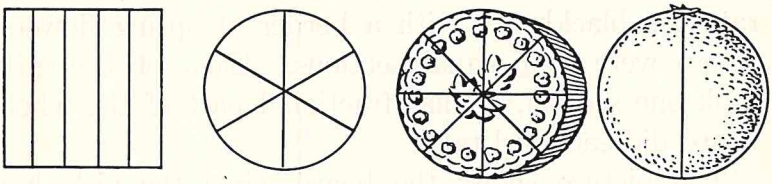
In the same way the numerals from 31 to 39 are written by adding XXX in front of the numbers above from I to IX.

3. Write the Roman numerals from 31 through 39.
4. What chapter is Chapter XIX in a book?
5. What chapter follows Chapter XIV in a book?
6. How do you know that XXX is 30?
7. How do you read XXXV?
8. How do you read XXXIX?
9. Mrs. Brown has Volume XII, Volume XXVII, and Volume XXXVI of a new set of books at home. What are the numbers of the three volumes that she has at home?
10. One section of the volumes of this set runs from XXV through XXXIV. Mrs. Brown has volumes XXVI and XXXI at home. Write the volume numbers of this set that she does not have at home.

A Whole and a Fraction



You already know that each of the parts of an apple that is cut into four equal parts is one-fourth. Four such equal parts would be the same as a whole apple.



1. How many fifths does it take to make a whole square? We write 5 fifths like this: $\frac{5}{5}$.

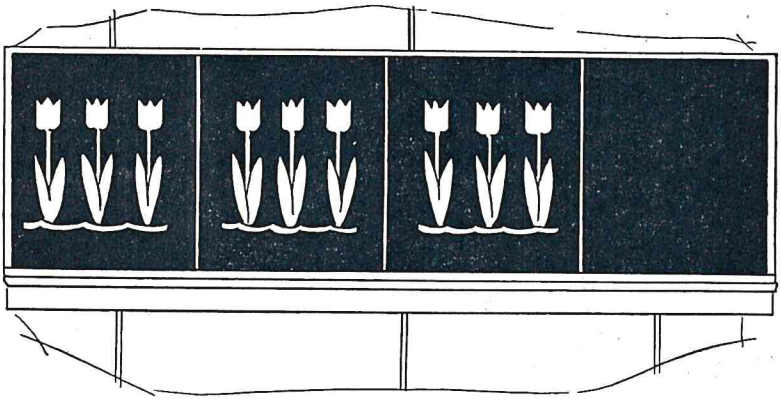
2. How many sixths does it take to make a whole circle? We write 6 sixths like this: $\frac{6}{6}$.

3. How many eighths does it take to make a whole cake? We write 8 eighths like this: $\frac{8}{8}$.

4. How many halves does it take to make a whole orange? We write 2 halves like this: $\frac{2}{2}$.

5. Draw six equal squares on the blackboard. Divide the first into thirds. Divide the second into fifths. Divide the third into halves. Divide the fourth into eighths. Divide the fifth into fourths.

Decorating the Blackboard



Miss Martin asked Alice, Jane, and Betty to decorate the blackboard with a border of spring flowers. There were four equal sections. Each of the girls took one section. What fractional part of the whole board did each girl take?

The picture shows the board when the girls had finished their sections. Each section of the board is $\frac{1}{4}$ of the whole board. Three sections have been decorated. Three $\frac{1}{4}$'s or three-fourths of the blackboard have been decorated. We write three-fourths as $\frac{3}{4}$.

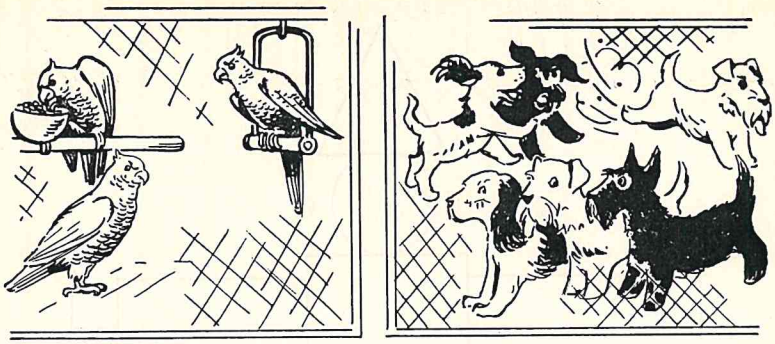
1. There are three tulips in each group. Each tulip is $\frac{1}{3}$ of a group of tulips.

2. Two tulips are — thirds of a group of tulips.

3. What part of the blackboard was not decorated?

4. If another fourth of the board had been decorated, what part of the board would then have been decorated?

The Pet Shop

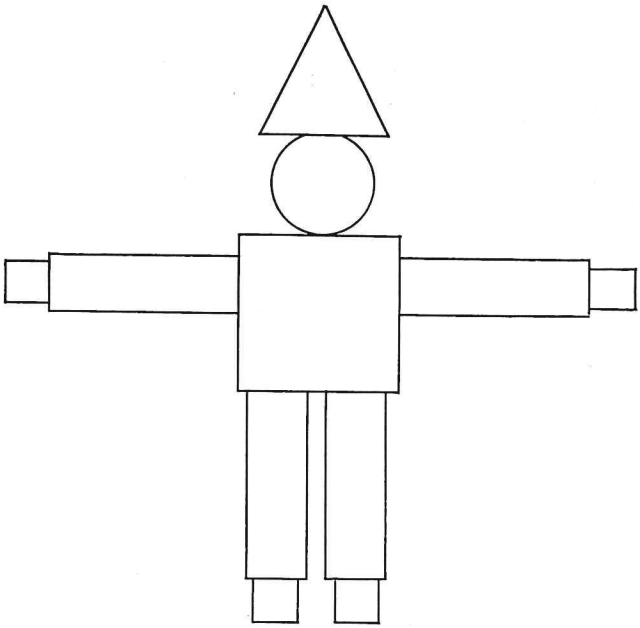


Give orally the fractions that are missing:

1. $\frac{1}{3}$ of the parrots is eating.
2. — of the parrots are not eating.
3. $\frac{2}{6}$ of the puppies are black.

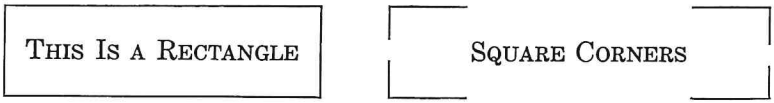
4. $\frac{2}{5}$ of the rabbits are eating.
5. — of the rabbits are white.
6. $\frac{1}{4}$ of the kittens is black.
7. — of the kittens are white.
8. — of the kittens are in the basket.

Cutting Out Patterns



Mary sent for directions to make the sponge doll shown in the picture.

The directions said, "Cut out 4 yellow pieces for the arms and legs, using the rectangle pattern."



"A rectangle has four straight sides and four square corners," said Mother.

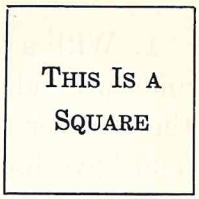
"This other pattern has four straight sides and four square corners," said Mary. "It does not look like

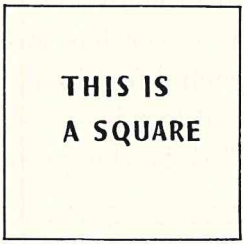
the patterns for the arms and legs."

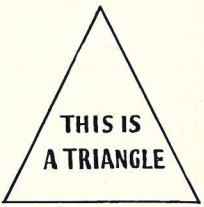
"That is a special kind of rectangle," said Mother. "All the sides are equal, and we call it a **square.**"

"The hands and feet are square too," said Mary.

The patterns looked like this:







"The shape of the head is a **circle,**" said Mary. "I know what a circle is, but what kind of figure is the hat?"

"The directions say 'Cut out a blue hat using the **triangle** pattern,' " answered Mother.

"This pattern with the three straight sides and three corners must be the *triangle* then," said Mary.

1. See if you can cut out these patterns and make a doll.

a. The pattern for the arms and legs is 6 in. long.

b. The pattern for the arms and legs is 2 in. wide.

2. What shape is the pattern for the body?

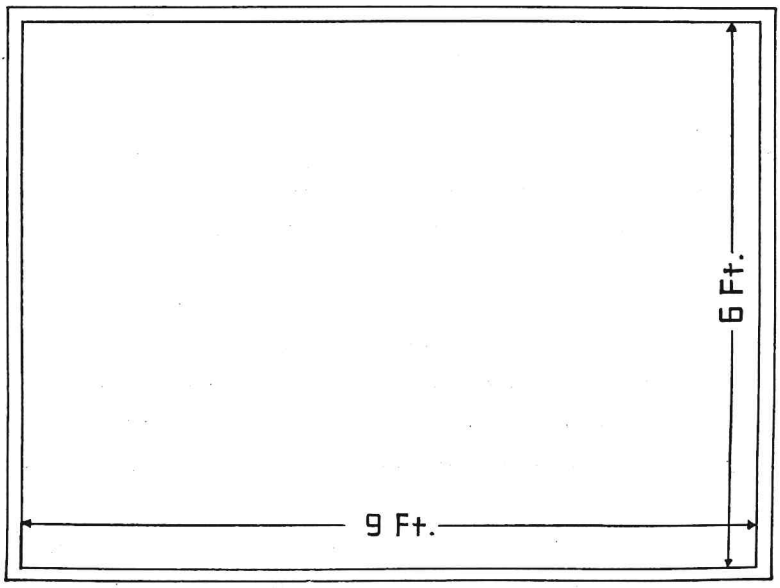
3. What shape is the pattern for the head?

Finding the Perimeter

1. With a yardstick measure in inches the two sides and two ends of the top of your teacher's desk. Add the number of inches in the two sides and two ends. You have found the **perimeter** of the top of the desk.

2. Find the perimeter of the top of your desk.

The new cover for the couch in the play room is to have a row of brown tape all the way around it as the picture shows. The cover has two sides each 9 feet long and two ends each 6 feet long. The sum of 9 feet + 6 feet + 9 feet + 6 feet is — —, the number of feet of tape needed. This is the *perimeter* of the cover.



1. What is the perimeter of the cover?

2. How many feet of tape must they buy?

3. How many inches of tape would that be?

4. Mother has 2 cushions each 2 feet long and 2 feet wide. How many feet of tape will it take to go around each of these cushions? The perimeter of the cushion is — feet.

5. How many feet of tape will it take for both cushions? (See Prob. 4.)

6. How many inches of tape will it take to go around each cushion? (See Prob. 4.) The perimeter of the cushion is — inches.

7. How many inches of tape will it take to go around both cushions? (See Prob. 5.)

> A **rectangle** has four straight sides and four square corners.
>
> A rectangle whose four sides are equal is called a **square.**
>
> A **triangle** has three straight sides and three corners.

8. What is the perimeter, in feet, of a square cushion that is 1 foot on each side?

9. How many inches of tape will it take to go around this cushion? (See Prob. 8.)

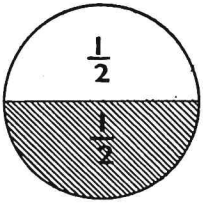
10. How many inches of tape will it take to go around all three of the cushions? (See Prob. 7 and 9.)

11. What is the perimeter, in feet, of a couch cover that is 8 feet wide and 10 feet long?

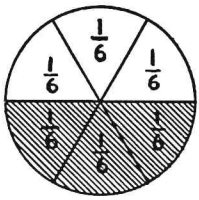
12. How many inches are there in the perimeter of this couch cover? (See Prob. 11.)

13. How many yards are there in this perimeter? (See Prob. 11.)

Equal Fractions

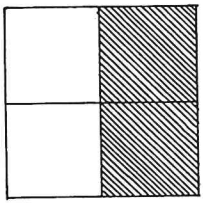


Jimmie's Pie



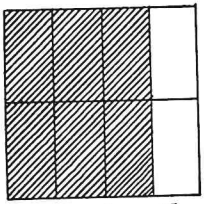
Bill's Pie

1. Jimmie ate the part of his pie that is dark. What part of his pie did he eat?



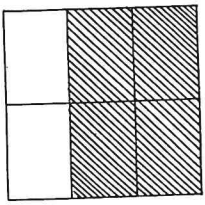
2. Bill ate the part of his pie that is dark. How many sixths of the pie did he eat?

It is easy to see that $\frac{3}{6}$ equals $\frac{1}{2}$.



3. $\frac{1}{2}$ of the square at the right is dark. How many fourths are dark? How many fourths are light? $\frac{1}{2}$ is equal to $\frac{2}{4}$.

4. $\frac{6}{8}$ of the square at the left is dark. How many fourths are dark? How many fourths are light? How many eighths are light?



5. $\frac{4}{6}$ of this square is dark. How many thirds of the square are dark? How many thirds are light?

Study these carefully:

$\frac{2}{4} = \frac{1}{2}$	$\frac{4}{8} = \frac{2}{4}$	$\frac{2}{2} = 1$	$\frac{5}{5} = 1$
$\frac{3}{6} = \frac{1}{2}$	$\frac{6}{8} = \frac{3}{4}$	$\frac{3}{3} = 1$	$\frac{6}{6} = 1$
$\frac{4}{8} = \frac{1}{2}$	$\frac{2}{6} = \frac{1}{3}$	$\frac{4}{4} = 1$	$\frac{8}{8} = 1$
$\frac{2}{8} = \frac{1}{4}$	$\frac{4}{6} = \frac{2}{3}$		

Using Four in Multiplying and Dividing

Study these multiplication facts with 4:

1	2	3	4	5	6	7	8	9
4	4	4	4	4	4	4	4	4
4	8	12	16	20	24	28	32	36

4	4	4	4	4	4	4	4
7	3	5	9	1	6	2	8
28	12	20	36	4	24	8	32

Copy and multiply:

1.	4	8	4	6	4	9	4	5
	7	4	3	4	4	4	2	4
2.	31	62	80	70	61	40	52	92
	4	4	4	4	4	4	4	4

Study these division facts with 4:

2	3	4	5	6	7	8	9
4)8	4)12	4)16	4)20	4)24	4)28	4)32	4)36

4	1	4	4	4	4	4	4
8)32	4)4	1)4	5)20	9)36	7)28	3)12	6)24	2)8

Copy and divide:

1.	4)20	9)36	4)12	7)28	4)16	4)48	4)32	6)24
2.	8)32	5)20	4)36	4)8	3)12	4)28	2)8	4)24

Give the answers to these examples orally. Watch the signs.

	A	B	C	D
1.	$20 \div 4 =$	$4 \times 9 =$	$24 \div 6 =$	$8 \times 4 =$
2.	$2 \times 4 =$	$32 \div 4 =$	$4 \times 6 =$	$12 \div 3 =$
3.	$8 \div 4 =$	$4 \times 4 =$	$36 \div 9 =$	$4 \times 8 =$
4.	$7 \times 4 =$	$20 \div 5 =$	$4 \times 3 =$	$12 \div 4 =$
5.	$32 \div 8 =$	$9 \times 4 =$	$16 \div 4 =$	$5 \times 4 =$

Write the answers:

6. $4 \times 3 + 2 =$ $4 \times 6 + 3 =$ $4 \times 8 + 2 =$

7. $4 \times 5 + 1 =$ $4 \times 7 + 3 =$ $4 \times 9 + 3 =$

8. 19 = 4 4's + —

9. 37 = — 4's + —

10. 27 = — 4's + —

11. 39 ÷ 4 = — + —

12. 23 = — 4's + —

13. 35 = — 4's + —

14. 34 = — 4's + —

15. 17 = — 5's + —

Canning Pears

1. Mary helped her mother can pears. They put six pears in each can. How many pears would they need for 4 cans?

2. They paid 9¢ each for the cans. How much did the 4 cans cost?

3. Mary paid 24¢ for 4 pounds of sugar. How much does sugar cost a pound?

4. She bought 4 boxes of jar rubbers at 8¢ a box. How much did she pay for the 4 boxes?

5. There are 4 cups of sauce in a can. How many cups of pear sauce were there in the 4 cans?

6. Twelve large pears were left over. They used these to make marmalade. If they added $\frac{1}{4}$ as many lemons as there were pears, how many lemons were used?

7. They used 4 large oranges that cost 8¢ each. How much did the oranges cost?

8. The boiler held enough marmalade to fill 7 jars at one cooking. If they made 28 jars full, how many different cookings did they have?

Using Five in Multiplying and Dividing

Study these multiplication facts with 5:

2	3	4	5	6	7	8	9
5	5	5	5	5	5	5	5
10	15	20	25	30	35	40	45

5	5	5	5	5	5	5	5
7	3	1	6	2	4	8	9
35	15	5	30	10	20	40	45

Copy and multiply:

1.	5	8	5	6	5	5	9	5	4
	7	5	3	5	2	5	5	9	5

2.	31	60	80	41	70	10	50	91	20
	5	5	5	5	5	5	5	5	5

Study these division facts with 5:

2	3	4	5	6	7	8	9
$5\overline{)10}$	$5\overline{)15}$	$5\overline{)20}$	$5\overline{)25}$	$5\overline{)30}$	$5\overline{)35}$	$5\overline{)40}$	$5\overline{)45}$
5	5	5	5	5	5	5	5
$8\overline{)40}$	$1\overline{)5}$	$7\overline{)35}$	$9\overline{)45}$	$3\overline{)15}$	$4\overline{)20}$	$2\overline{)10}$	$6\overline{)30}$

Copy and divide:

1.	$5\overline{)20}$	$9\overline{)45}$	$5\overline{)15}$	$7\overline{)35}$	$5\overline{)25}$	$5\overline{)40}$	$2\overline{)10}$	$5\overline{)50}$
2.	$8\overline{)40}$	$4\overline{)20}$	$5\overline{)10}$	$5\overline{)45}$	$5\overline{)35}$	$3\overline{)15}$	$5\overline{)155}$	$6\overline{)30}$

Give the answers to these orally. Watch the signs.

1.	$25 \div 5 =$	$5 \times 9 =$	$30 \div 6 =$	$8 \times 5 =$
2.	$2 \times 5 =$	$35 \div 5 =$	$5 \times 6 =$	$15 \div 3 =$
3.	$10 \div 5 =$	$4 \times 5 =$	$45 \div 9 =$	$5 \times 8 =$
4.	$40 \div 8 =$	$9 \times 5 =$	$20 \div 5 =$	$5 \times 4 =$
5.	$35 \div 7 =$	$6 \times 5 =$	$30 \div 5 =$	$5 \times 7 =$
6.	$8 \times 4 =$	$32 \div 4 =$	$4 \times 9 =$	$36 \div 9 =$

Write the answers:

1. $5 \times 7 + 3 =$ $\quad 5 \times 8 + 1 =$ $\quad 5 \times 9 + 4 =$

2. $37 =$ — 5's + — $\quad 29 =$ — 5's + —

3. $49 =$ — 5's + — $\quad 34 =$ — 5's + —

Multiplication and Division Problems

1. George spent 4 weeks of his vacation at a boys' camp at Cedar Lake. How many days was he there?

2. Mother can put 5 cookies in a pan. If she made 40 cookies, how many times did she fill the pan?

3. Mother piled the cookies in stacks of 8. How many stacks will the 40 cookies make?

4. Frank promised to give 9¢ each for 6 books. How much will he have to pay for them?

5. Five of Bill's friends bought him a birthday present. If each paid 8¢, how much did it cost?

6. There are 48 books on the book rack. The rack has 6 shelves. How many books are on each shelf if each shelf holds the same number?

7. There are 8 basket ball teams in the elementary school. Nine boys play with each team. How many boys play on the teams?

8. The 35 children in the fifth grade are seated in 7 equal rows. How many children are in each row?

9. Last month 7 of the children in the third grade each earned 9 gold stars. How many gold stars did all of them earn?

10. If 32 books are mailed in packages of 4 each, how many packages will there be?

11. There are 2 pints in 1 quart. How many pints are there in 4 quarts?

12. The 7 new desks in the third-grade room cost $63. How much did each desk cost?

13. Albert gets 5¢ a day for keeping Mr. Baker's sidewalks swept. How much does he get in a week?

14. Mother ironed 9 shirts in 54 minutes. How long does it take her to iron a shirt?

15. Dick paid 4¢ each for 8 tablets at a sale. How much did he pay for all the tablets?

16. How many 5¢ candy bars can Jane buy for 45¢?

17. If Mary feeds her dog 3¢ worth of food a day, how much will food for 9 days cost?

18. If 8 roses cost 56¢, how much will 1 rose cost?

19. There are 36 children in the fourth grade. If they are divided into 6 spelling teams, how many will there be on each team?

20. Betty wants to divide 36 sheets of paper equally among 9 friends. How many sheets will each one get?

Using Six in Multiplying and Dividing

Study these multiplication facts with 6:

2	3	4	5	6	7	8	9
6	6	6	6	6	6	6	6
12	18	24	30	36	42	48	54

6	6	6	6	6	6	6	6
7	1	3	5	9	2	4	8
42	6	18	30	54	12	24	48

Copy and multiply:

1.	6	8	6	6	5	9	6	4
	7	6	3	6	6	6	2	6
2.	31	60	80	41	70	50	90	20
	6	6	6	6	6	6	6	6

Study these division facts with 6:

2	3	4	5	6	7	8	9
$6\overline{)12}$	$6\overline{)18}$	$6\overline{)24}$	$6\overline{)30}$	$6\overline{)36}$	$6\overline{)42}$	$6\overline{)48}$	$6\overline{)54}$
6	6	6	6	6	6	6	6
$8\overline{)48}$	$1\overline{)6}$	$9\overline{)54}$	$3\overline{)18}$	$7\overline{)42}$	$4\overline{)24}$	$2\overline{)12}$	$5\overline{)30}$

Copy and divide:

1. $6\overline{)24}$	$9\overline{)54}$	$6\overline{)18}$	$7\overline{)42}$	$6\overline{)36}$	$6\overline{)30}$	$6\overline{)48}$	$2\overline{)12}$
2. $5\overline{)30}$	$8\overline{)48}$	$6\overline{)54}$	$6\overline{)42}$	$3\overline{)18}$	$6\overline{)60}$	$4\overline{)24}$	$6\overline{)12}$

Give the answers to these orally. Watch the signs.

1.	$30 \div 6 =$	$6 \times 9 =$	$36 \div 6 =$	$8 \times 6 =$
2.	$54 \div 9 =$	$4 \times 6 =$	$12 \div 6 =$	$6 \times 4 =$
3.	$7 \times 6 =$	$30 \div 5 =$	$6 \times 3 =$	$42 \div 6 =$
4.	$48 \div 6 =$	$9 \times 6 =$	$24 \div 6 =$	$6 \times 8 =$
5.	$18 \div 6 =$	$6 \times 5 =$	$48 \div 8 =$	$6 \times 7 =$
6.	$54 \div 6 =$	$6 \times 6 =$	$42 \div 7 =$	$5 \times 6 =$

Write the answers:

1. $6 \times 7 + 2 =$ $\quad 6 \times 8 + 2 =$ $\quad 6 \times 9 + 2 =$

2. The answers in Ex. 1 grow larger by —. Do you know why this is true?

Practice with Problems

1. Alice is saving her money to buy a new dress. If she saves 9¢ a week, how much can she save in 6 weeks?

2. She bought 8 yards of ribbon for 48¢. How much did the ribbon cost a yard?

3. She wants buttons for the front of the dress. She needs 4 groups of buttons with 6 in each group. How many buttons does she need?

4. Bill has 42 stamps in his stamp book. They are pasted on 7 pages. How many stamps are there on a page if there are the same number on each page?

5. He paid 5¢ each for 6 stamps. How much did they cost?

6. Bill's uncle, who is traveling, sent him some stamps from South America. He sent 3 stamps from each of 6 countries. How many stamps did Bill get?

7. Bill paid 36¢ for a box of 6 stamps. How much did each stamp cost him?

8. Father bought 6 books. He paid $2 each for them. How much did all of them cost?

9. He paid $24 for 6 golf clubs. What did one club cost?

10. What will 6 quarts of milk cost at 8¢ a quart?

11. If apples sell for $2 a box, how many boxes can I buy for $12?

12. Mother used 6 eggs every day for a week. How many eggs did she use in the week?

13. At this rate how many eggs will Mother use in 12 weeks? (See Prob. 12.)

Practice

Divide and check:

1.	7)1484	5)6485	9)1692	6)8466	8)9768
2.	5)9435	7)2892	6)8352	8)5784	9)4461
3.	8)4174	6)4873	7)1675	9)8199	5)5982
4.	9)9715	8)5643	5)2795	7)4428	6)7284
5.	8)7528	9)8246	6)8227	5)4652	7)1986

Multiply. Use an answer sheet.

6.	4664 × 9	3789 × 7	9567 × 6	6887 × 9	6879 × 8
7.	8468 × 8	7865 × 6	8729 × 7	7956 × 9	8786 × 8
8.	945 × 89	597 × 76	866 × 85	963 × 87	959 × 67
9.	974 × 68	698 × 95	678 × 69	987 × 88	478 × 97

Subtract. Use an answer sheet.

10.	4867 − 3539	5773 − 2978	3548 − 1647	9138 − 2946	1855 − 923
11.	2086 − 1007	8435 − 2986	9775 − 2837	7421 − 2958	1876 − 1499

Copy and add:

12. 8936	7537	4798	3687	8757
8469	8765	7869	7489	4865
768	3825	75	356	9425
4685	563	164	5690	684
710	506	24	385	162

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Use a fraction and know that it means a part of a whole.
2. Find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, and $\frac{1}{8}$ of a number.
3. Tell which of two fractions is the larger.
4. Read simple fractions that have numbers larger than 1 on top.
5. Tell when two small fractions are equal.
6. Read and write Roman numerals I through XXXIX.
7. Show what a rectangle, square, triangle, and circle look like.
8. Use the word *perimeter*.

Are You Ready for the Next Chapter?

1. See if you can finish tests 32-37 without making any errors. If so, you may omit the Remedial Practice (Sets 32-37) and study pages 289-291 in Chapter 9. Do your best.

2. Did you make errors on the tests? If so, study the examples you do not know on the pages shown in **heavy type.**

3. Use answer sheets for tests 32, 36, and 37.

Diagnostic Test No. 32: Fractions 237-238

1. What is $\frac{1}{8}$ of each number?

   64 24 16 32 48 40

2. What is $\frac{1}{6}$ of each number?

   36 18 42 24 12 48

3. What is $\frac{1}{5}$ of each number?

   25 30 40 20 35 45

4. What is $\frac{1}{3}$ of each number?

   27 72 18 54 36 45

5. Find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{6}$ of 60.

6. Which of these fractions is the larger:

   $\frac{1}{2}$ or $\frac{1}{3}$; $\frac{1}{4}$ or $\frac{1}{5}$; $\frac{1}{8}$ or $\frac{1}{6}$;
   $\frac{1}{3}$ or $\frac{2}{3}$; $\frac{4}{5}$ or $\frac{3}{5}$; $\frac{1}{4}$ or $\frac{2}{4}$.

7. Write in words: $\frac{7}{8}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{2}{3}$, $\frac{3}{5}$.

8. Tell whether the fractions in each pair are equal or unequal:

   a. $\frac{1}{2}$ and $\frac{2}{4}$ *c.* $\frac{1}{6}$ and $\frac{2}{3}$ *e.* $\frac{1}{4}$ and $\frac{1}{8}$
   b. $\frac{1}{4}$ and $\frac{3}{8}$ *d.* $\frac{1}{3}$ and $\frac{2}{6}$ *f.* $\frac{1}{8}$ and $\frac{2}{4}$

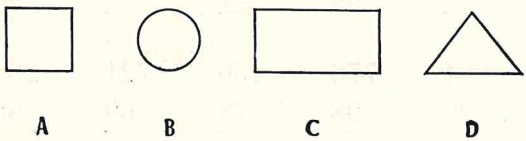
Diagnostic Test No. 33: Important Questions 238

1. Write the Roman numerals for these numbers:

   2, 5, 7, 10, 15, 19, 20, 25, 29, 30, 35, 39

2. What is the perimeter, in feet, of a table top that is 5 feet long and 3 feet wide?

3. What is the name of each of these?



Diagnostic Test No. 34: Division **238**

1.	7)4595	8)6490	6)4728	9)1080	7)2189
2.	8)4781	6)1284	9)1899	6)5684	9)7506
3.	7)3577	8)1834	6)3683	9)3806	8)7504
4.	7)784	8)2492	9)3707	8)9641	9)4764
5.	6)678	7)2882	6)4871	7)6386	8)4584
6.	9)2934	8)5696	7)1481	6)2478	7)4980
7.	6)5472	9)5662	8)3374	9)6582	8)2787
8.	9)8342	6)1896	7)4294	6)3090	7)5683

Diagnostic Test No. 35: Multiplication **239**

1.	896	998	778	994	765	886	994
	48	67	49	65	79	48	89
2.	608	900	89	98	678	996	887
	79	84	10	100	85	67	95
3.	563	889	994	428	669	749	886
	76	46	50	27	39	93	47
4.	945	804	776	456	721	298	567
	62	29	98	73	69	88	95

Diagnostic Test No. 36: Addition 239

1.	2.	3.	4.	5.
778	709	900	991	899
886	900	88	972	786
989	867	789	776	457
889	789	975	876	564
994	465	765	867	987

Diagnostic Test No. 37: Subtraction 239

1.	2.	3.	4.	5.	6.	7.	8.
9546	322	621	9351	8958	793	642	632
6688	184	42	7827	7379	607	403	206

Remedial Practice in Fractions (Set 32)

1. 8 is $\frac{1}{8}$ of 64, because 64 ÷ 8 is 8.

$$\begin{array}{r} 8 \\ 8\overline{)64} \\ \underline{64} \end{array}$$

3 is $\frac{1}{8}$ of 24, because 24 ÷ 8 is 3.

$$\begin{array}{r} 3 \\ 8\overline{)24} \\ \underline{24} \end{array}$$

2. 6 is $\frac{1}{6}$ of 36, because 36 ÷ 6 is 6.

$$\begin{array}{r} 6 \\ 6\overline{)36} \\ \underline{36} \end{array}$$

3. 5 is $\frac{1}{5}$ of 25, because 25 ÷ 5 is 5.

$$\begin{array}{r} 5 \\ 5\overline{)25} \\ \underline{25} \end{array}$$

4. (Problem 8). *a.* $\frac{1}{2}$ is the same as $\frac{2}{4}$. 2 halves make a whole. Then $\frac{1}{2}$ is $\frac{1}{2}$ of a whole. 4 fourths make a whole. Then $\frac{2}{4}$ is $\frac{1}{2}$ of a whole. Then, $\frac{1}{2}$ and $\frac{2}{4}$ are both the same as $\frac{1}{2}$ of a whole. Then $\frac{1}{2} = \frac{2}{4}$.

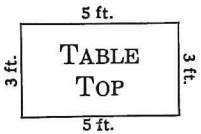
b. $\frac{1}{4}$ and $\frac{3}{8}$ are unequal fractions.

Remedial Practice with Important Questions (Set 33)

1.

2 = II	10 = X	20 = XX	30 = XXX
5 = V	15 = XV	25 = XXV	35 = XXXV
7 = VII	19 = XIX	29 = XXIX	39 = XXXIX

2.



5 ft. + 3 ft. + 5 ft. + 3 ft. = 16 ft.
Perimeter is 16 ft.

3. In A the four sides are equal. It is a square.

B is round. It is a circle.

C has four straight sides and four square corners. The four sides are not equal. It is a rectangle.

D has three straight sides and three corners. It is a triangle.

Remedial Practice in Dividing (Set 34)

1.

656	811	788	120	312
7)4595	8)6490	6)4728	9)1080	7)2189
42	64	42	9	21
39	9	52	18	8
35	8	48	18	7
45	10	48	0	19
42	8	48	0	14
3	2			5

Remedial Practice in Multiplying (Set 35)

1. 896 $8 \times 6 = 48$. Write 8, carry 4.
48 $8 \times 9 = 72$. $72 + 4$ (carried) $= 76$.
7168 Write 6, carry 7.
3584 $8 \times 8 = 64$. $64 + 7 = 71$. Write 71.
43008 $4 \times 6 = 24$. Write 4 under 6, carry 2.
$4 \times 9 = 36$. $36 + 2 = 38$. Write 8, carry 3.
$4 \times 8 = 32$. $32 + 3 = 35$. Write 35.
Bring down 8 and add. The answer is 43,008.

Remedial Practice in Adding (Set 36)

	Ones' Column	Tens' Column	Hundreds' Column
1. 778		3 (carried)	4 (carried)
886	$8 + 6 = 14$	$+ 7 = 10$	$+ 7 = 11$
989	$14 + 9 = 23$	$10 + 8 = 18$	$11 + 8 = 19$
889	$23 + 9 = 32$	$18 + 8 = 26$	$19 + 9 = 28$
994	$32 + 4 = 36$	$26 + 8 = 34$	$28 + 8 = 36$
4536	Write 6,	$34 + 9 = 43$	$36 + 9 = 45$
	Carry 3	Write 3, carry 4	Write 45.

The answer is 4,536.

Remedial Practice in Subtracting (Set 37)

1. 9546 Borrow 1 from 4 and leave 3.
6688 Think $16 - 8 = 8$. Write 8.
2858 Borrow 1 from 5 and leave 4.
Think $13 - 8 = 5$. Write 5.
Borrow 1 from 9 and leave 8.
Think $14 - 6 = 8$. Write 8.
Think $8 - 6 = 2$. Write 2.
The answer is 2,858.

Improvement Test No. 7

1. John has taken 6 Improvement Tests. He has made these scores: 6, 8, 6, 8, 6, 8. What is the sum of his scores on the 6 tests?

2. What is John's average score? (See Prob. 1.)

3. The sum of his scores on the six tests is — more than his score on Test 1. (See Prob. 1.)

4. How much must he score on Test 7 to get the highest score he has had on any one of the tests?

5. Mary scored 7 on each of her first 4 tests. How much did she score on all of these tests?

6. She scored 9 on each of the last 2 tests. How much did she score on all of these tests?

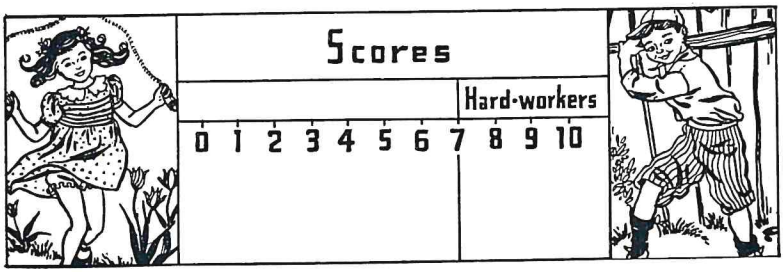
7. What was Mary's score on all 6 of the tests? (See Prob. 5 and 6.)

8. How much more did she score on the first 4 tests than on the last 2 tests? (See Prob. 5 and 6.)

9. Mary's score on all of the 6 tests is 46. How much must she score on the next test to make 56?

10. If Mary makes 56 on 7 of the tests, how much is her average score for each test?

Were you in the hard-workers' group in this chapter?



CHAPTER 8

USING NEW MEASURES AND REVIEWING

The Temperature

1. When Jane and Jimmie took the thermometer inside the house, it went from 20° up to 70°. How much warmer was it in the house than outside?

2. Water freezes and makes ice when the temperature gets as low as 32° or lower. If the thermometer reads 20°, how far below freezing is it?

3. The temperature of one's body in health is about 98°. How far below that temperature is a house temperature of 70°?

4. David's aunt wrote him that it was 20° below zero on her porch on January 20 and 10° below zero on January 21. On which day was it colder? How much colder?

Liquid Measure

Here is a list of the things that we have learned about measuring liquids. Such a list is called a **table.** By looking at the table you can quickly answer questions about liquids.

2 cups	**=**	**1 pt.**
2 pints	**=**	**1 qt.**
4 quarts	**=**	**1 gal.**

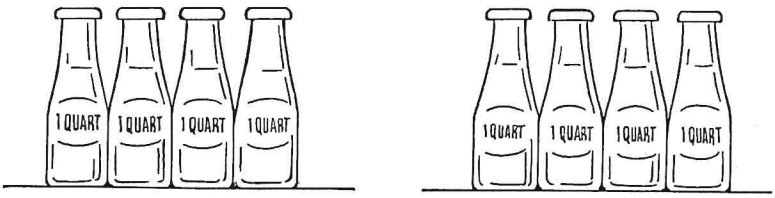
Answer these questions orally:

1. How many cups are there in 4 pints?

1 Pt. 1 Pt. 1 Pt. 1 Pt.

There are — cups in 4 pints.

2. Mother has 2 gallons of milk in a pail. How many quart bottles will it take to hold the milk?

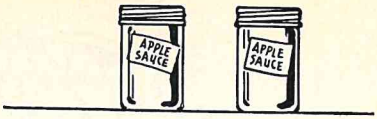


1 gallon 1 gallon

It will take — quart bottles to hold 2 gallons of milk.

3. There are 6 quart jars of apple sauce in the fruit cupboard. How many pint jars will hold the sauce?

1 qt.



1 qt.

4. There are 6 pints of lemonade in a large glass pitcher. How many cups will it fill?

5. There are 24 quarts of honey in a large jar. How many one-gallon cans will the honey fill?

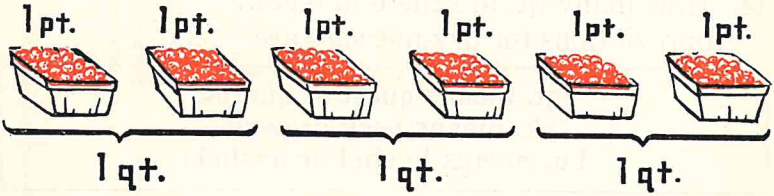
Dry Measure

2 pints	=	1 quart
8 quarts	=	1 peck
4 pecks	=	1 bushel

Many of the things that we use are measured in quarts, pecks, and bushels. Grains, like corn and wheat, vegetables, and fruits are usually measured this way.

If you do not know how large a bushel is, ask your grocer to show you a bushel basket. He probably has one filled with apples or potatoes.

1. A farmer has 6 pint boxes filled with strawberries. How many quart baskets will it take to hold them?



2. How many pecks are there in a bushel?
3. How many pecks are there in 3 bushels?
4. What part of a bushel is one peck?
5. How many quarts are there in 9 pecks?
6. How many quarts are there in a bushel?
7. How many qt. are there in 7 pk.?
8. What part of a qt. is 1 pt.?
9. How many qt. are there in 2 bu.?
10. What part of a pk. is one qt.?
11. How many qt. are there in 5 pk.?
12. How many pk. are there in 9 bu.?
13. How many pk. are there in 12 bu.?
14. How many qt. are there in 5 gal.?

Abbreviations for dry-measure are:

qt. means quart or quarts **pk. means peck or pecks** **bu. means bushel or bushels**

Clock Time

60 minutes	**= 1 hour**
24 hours	**= 1 day**

Abbreviations for minute and hour are:

min. means minute or minutes
hr. means hour or hours

There are only 12 hours shown on a clock face. The hands of a clock go around twice in a day and night. It is 12 o'clock twice in 24 hours.

There are 24 hours in 1 day.

12 o'clock in the daytime is called 12 noon.

12 o'clock in the night is called 12 midnight.

The time from 12 o'clock noon to 12 o'clock midnight is usually written P.M.

From 12 o'clock midnight to 12 o'clock noon it is forenoon. It is usually written A.M.

Here is a train schedule showing when trains arrive and leave. See if you can read it.

	TRAINS GOING EAST	
Number 1	Arrives 6:00 A.M.	Leaves 6:15 A.M.
Number 3	Arrives 2:45 P.M.	Leaves 3:00 P.M.
Number 5	Arrives 11:20 P.M.	Leaves 11:35 P.M.
	TRAINS GOING WEST	
Number 2	Arrives 5:45 A.M.	Leaves 6:05 A.M.
Number 4	Arrives 10:40 A.M.	Leaves 11:05 A.M.
Number 6	Arrives 4:10 P.M.	Leaves 4:20 P.M.

Calendar Time

7 days	=	**1** week
365 days	=	**1** year
52 weeks	=	**1** year
12 months	=	**1** year

The months are of different lengths. Every fourth year has 366 days instead of 365. The long year is called a **leap year.** The extra day is added to February, making it have 29 days instead of 28.

Look at a calendar and answer these questions:

1. Which months have 30 days?

2. Which months have 31 days?

3. How many days does the shortest month have?

4. How many months are shown on the calendar?

5. Every month has at least — weeks.

6. If you divide 365 days in a year by 7, you will find that there are — weeks and — day in a year.

7. How many weeks and days are there in a leap year?

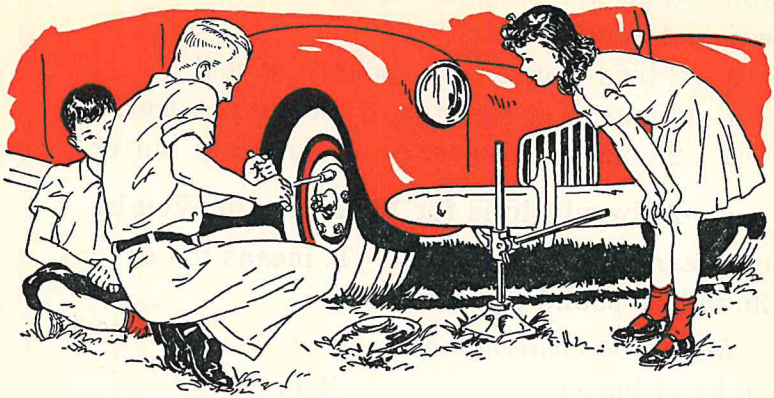
8. 1940 and 1944 were leap years. When is the next leap year after 1944?

9. When is the next leap year after 1952.

Abbreviations for calendar time are:

da. means day or days
wk. means week or weeks
mo. means month or months
yr. means year or years

Measures of Weight



"A jack must be very strong to lift a heavy car," said Jane.

"How heavy is a car, Father?" asked Jimmie.

"This one weighs a little more than a ton," answered Father. "It would take about 25 boys of your size to weigh as much."

"That would be a great many pounds," said Jimmie.

"Yes," said Father. "It takes 2,000 pounds to make a ton. I buy coal by the ton. The truck that brings coal here usually hauls about 3 tons."

16 ounces	**= 1 pound**
2,000 pounds	**= 1 ton**

1. Would you weigh these things in pounds, ounces, or tons: a load of hay; a sack of sugar; a box of butter; a box of pepper; a bar of candy; a freight car?

2. Name two things that you buy at the grocery store that are weighed in pounds. Two that are weighed in ounces.

3. 2 tons of coal = — pounds of coal.

4. 16 ounces of sugar = — pound of sugar.

5. 2 pounds of butter = — ounces of butter.

Abbreviations for Measures of Weight

oz. means ounce or ounces **T. means ton or tons**
lb. means pound or pounds

Read these abbreviations:

6 lb. of butter	2 T. of coal
3 lb. 2 oz. of coffee	30 lb. of walnuts
1 T. 208 lb. of hay	1 lb. 4 oz. of sausage
50 lb. of flour	12 oz. of chocolate candy

1. Mr. Hunt bought 2,000 pounds of coal last week. The truck that hauled the coal weighed 2 T. How many pounds did the truck and the coal weigh?

2. How many pounds are there in 6 T.?

3. If I put 3 oz. of pepper in a sack that weighs 1 oz., how much will the package weigh?

4. Mr. Black's car weighs 2,750 lb. How much more than a ton is that?

5. How much more than a ton will the car weigh with Mr. Black in it if he weighs 178 lb.? (See Prob. 4.)

6. Grandfather bought two loads of hay. The first load weighed 1,820 lb. The second load weighed 2,340 lb. How much heavier was the second load than the first? Which load weighed the nearer to 1 T.?

7. Jimmie's father sent for a chair that weighed 80

lb. The crate in which it was packed weighed 37 lb. On how much weight did Father have to pay freight?

Linear Measure

12 inches	**= 1 foot**	**5280 feet**	**= 1 mile**
3 feet	**= 1 yard**	**1760 yards**	**= 1 mile**

You can easily tell by looking at a foot rule how long a foot is. A yard is 3 times that long.

1. Do you know about how long a mile is? Name a place that is about a mile from your school. Ask your father to show you a place that is about a mile from your home.

2. If you take long steps, you can step a yard each step. How many such steps would it take to walk a mile?

3. Measure your steps and see if you can step a yard.

Estimate these lengths and then measure them:

4. About how high from the floor is the teacher's table top? Your desk? The blackboard?

5. About how many feet tall is your father?

6. About how long is a broom handle?

7. About how high is the door? How wide is it?

8. Take long steps and see about how many yards long your school room is.

9. Measure the length of your school room with a yardstick and see if you were nearly right. (See Prob. 8.)

Abbreviations for Linear Measures

in. means inch or inches	yd. means yard or yards
ft. means foot or feet	mi. means mile or miles

Tables of Measure

Each Friday the fourth-grade pupils listen to a radio program that is prepared just for them. The next program is to be an arithmetic quiz. The announcer promised to use questions written by pupils. He said he would give a prize to the pupils writing the best questions. Jane's class sent the announcer this test on measures.

1. The instrument we use to find the temperature of our classroom is called a —.
2. Which months have 31 days?
3. Oz. is the abbreviation for — or ——.
4. Joan's height is 4 feet. Her height in inches is —.
5. Mother buys pepper by the —.
6. There are 8 quarts in 1 peck. How many quarts are there in 9 pecks?
7. Mary's train was due at the station at 12:15 P.M. She arrived at the station at 12:05 P.M. How many minutes did she have to wait?
8. Father has 2 gallons of milk. How many pints is that?
9. How many feet are there in a yard?
10. A foot is what part of a yard?

Review Problems

1. Ralph's father gave him some ground for a garden. It was 6 yards long. Ralph planted a row of popcorn as long as the garden. How many feet of popcorn did he plant?

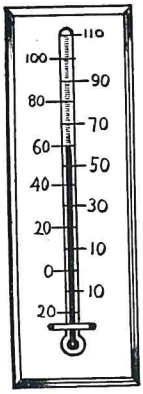
2. In 14 days the popcorn came up. How many weeks did it take the popcorn to come up?

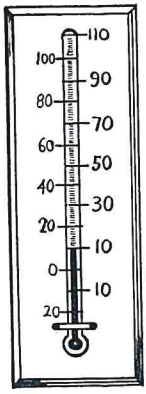
3. When Ralph shelled the popcorn he had 6 quarts. He sold 4 quarts to the grocer at 24 cents a quart. How much did he get from the grocer for his popcorn?

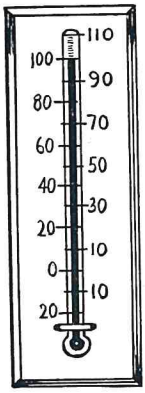
4. Last year Ralph raised 16 quarts of popcorn. How many pecks of popcorn did he raise?

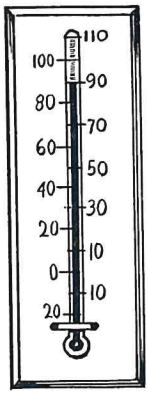
5. Alice's father goes to work at 9 A.M. He comes home for lunch at 12 noon. How many hours does he work in the morning?

6. Jane read that Mt. McKinley is 20,464 feet high. Is that more or less than 3 miles. The height of Mt. McKinley is — feet — than 3 miles.









7. At 8 A.M. on the day that Ralph planted his popcorn, the thermometer looked like the one in the first picture. What was the temperature?

8. Read the thermometers in the second, third, and fourth pictures.

9. Father said that he used 12 tons of coal during the winter. How many pounds of coal is that?

10. If the coal cost Father $7.45 a ton, how much did the 12 tons cost him?

11. Mother says that she uses a gallon of milk a day. How many quarts does she use in a week?

12. Mother pays $.60 a gallon for milk. If she were to buy it by the quart, it would cost $.16. How much does she save on each gallon by buying it by the gallon instead of by the quart?

Copy and fill in the missing numbers:

13. 3 lb. = — oz.

14. 15 yd. = — ft.

15. 10 gal. = — qt.

16. 8 hr. = — min.

17. 24 wk. = — da.

18. 48 pk. = — bu.

19. 1 yd. = — in.
20. 1 bu. = — qt.
21. 3 T. = — lb.
22. 6 bu. = — qt.
23. 7 da. = — hr.
24. 32 qt. = — gal.
25. 36 ft. = — yd.
26. 16 pt. = — qt.
27. 63 da. = — wk.
28. 64 bu. = — pk.

Buying and Selling Vegetables

1. These boys are selling fruit and vegetables at their Drive Inn Market. They sold 9 bunches of carrots at 10¢ a bunch. How much did they get for the carrots?

2. Mr. Jones paid 80¢ for 4 pounds of tomatoes. At that rate how much were tomatoes a pound?

3. The boys paid 60¢ for 5 pounds of apples. How much did they pay for each pound?

4. A five-pound head of cabbage sold for 45¢. How much was that a pound?

5. Harold shelled 2 quarts of beans in an hour. How long did it take him to shell 4 quarts?

6. They sold 4 pounds of shelled beans at 12¢ a pound. How much did they get for the beans?

7. Mrs. Roberts bought 5 pounds of onions at 8¢ a pound. How much did they cost?

8. If the boys put 7 beets in a bunch, 35 beets will make how many bunches?

9. The boys sold the five bunches of beets at 15¢ a bunch. How much did they get for the beets?

10. They sold 5 heads of lettuce for 20¢ a head. How much did they get for the lettuce?

11. They bought 18 pounds of tomatoes from a man who sold vegetables from a truck. They put them into two-pound baskets. How many baskets did the tomatoes fill?

12. If the tomatoes cost them 15¢ a pound, what did each basket of tomatoes cost them if there were 2 lb. in a basket?

13. See if you can figure what Mrs. Hansen's vegetables cost. She bought 1 bunch of carrots, 5 pounds of onions, and 3 pounds of shelled beans. (Carrots are 10¢ a bunch, onions are 8¢ a pound, and shelled beans are 12¢ a pound.)

14. The first day the boys had their stand open they took in $7.45. The second day they took in $9.21. The third day they took in $9.12. How much money did they take in during the three days?

15. During the three days they bought $15.60 worth of vegetables. How much more did they take in during the first three days than they paid out for vegetables? (See Prob. 14.)

Using Seven in Multiplying and Dividing

Study these multiplication facts with 7:

2	3	4	5	6	7	8	9
7	7	7	7	7	7	7	7
14	21	28	35	42	49	56	63

7	7	7	7	7	7	7	7
9	3	1	5	6	2	4	8
63	21	7	35	42	14	28	56

Copy and multiply:

1.	6	8	7	7	5	9	7	4
	7	7	3	7	7	7	2	7
2.	31	60	80	41	70	50	90	20
	7	7	7	7	7	7	7	7

Study these division facts with 7:

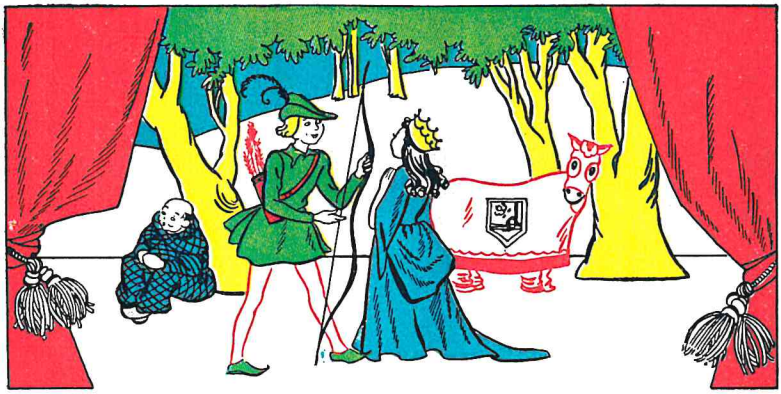
2	3	4	5	6	7	8	9
7)14	7)21	7)28	7)35	7)42	7)49	7)56	7)63

7	7	7	7	7	7	7	7
8)56	9)63	3)21	1)7	4)28	2)14	6)42	5)35

Copy and divide:

1.	7)28	9)63	7)21	7)49	7)35	7)56	2)14	7)70
2.	8)56	4)28	7)14	7)42	6)42	7)63	3)21	5)35

Giving a Show



1. Some of the children gave a show. They took in 63¢ the first time they gave it. If 9 people were there, how much did they charge for the show?

2. There were 7 acts in the show. Each act took 4 minutes. How long did the show last?

3. They sold 7 bags of popcorn for 5¢ a bag. How much did they get for popcorn?

4. They took in 21¢ for lemonade the last time they gave the show. How many glasses of lemonade did they sell if they charged 3¢ a glass?

5. Tell what 7 of each of the following will cost at the show if these prices are charged.

grapefruit	9¢ each	large melons	8¢ each
apples	7¢ each	pears	6¢ each
bananas	4¢ each	small apples	3¢ each

6. Seven boys had a pony and cart at the show. Both cost them $35. They shared the cost equally. How much did each one pay?

Give the answers to these examples orally. Watch the signs.

1.	$35 \div 7 =$	$7 \times 9 =$	$42 \div 7 =$	$8 \times 7 =$
2.	$63 \div 9 =$	$4 \times 7 =$	$14 \div 7 =$	$7 \times 4 =$
3.	$7 \times 7 =$	$35 \div 5 =$	$7 \times 3 =$	$21 \div 3 =$
4.	$56 \div 7 =$	$63 \div 7 =$	$28 \div 7 =$	$7 \times 8 =$
5.	$42 \div 6 =$	$7 \times 5 =$	$56 \div 8 =$	$7 \times 6 =$
6.	$8 \times 8 =$	$64 \div 8 =$	$8 \times 9 =$	$72 \div 8 =$

Write the answers:

1.	$7 \times 7 + 3 =$	$7 \times 8 + 3 =$	$7 \times 9 + 3 =$
2.	60 = — 7's + —	61 = — 7's + —	62 = — 7's + —
3.	$8 \times 7 + 2 = ?$	$6 \times 9 + 3 = ?$	$7 \times 6 + 5 = ?$

Using Eight in Multiplying and Dividing

Study these multiplication facts with 8:

2	3	4	5	6	7	8	9
8	8	8	8	8	8	8	8
16	24	32	40	48	56	64	72

8	8	8	8	8	8	8	8
7	3	5	9	1	6	2	4
56	24	40	72	8	48	16	32

Copy and multiply:

1.	6	8	8	8	5	9	8	4
	8	7	3	8	8	8	2	8
2.	31	60	80	41	70	50	90	20
	8	8	8	8	8	8	8	8

Study these division facts with 8:

2	3	4	5	6	7	8	9
$8\overline{)16}$	$8\overline{)24}$	$8\overline{)32}$	$8\overline{)40}$	$8\overline{)48}$	$8\overline{)56}$	$8\overline{)64}$	$8\overline{)72}$
8	8	8	8	8	8	8	8
$9\overline{)72}$	$7\overline{)56}$	$3\overline{)24}$	$4\overline{)32}$	$1\overline{)8}$	$2\overline{)16}$	$6\overline{)48}$	$5\overline{)40}$

Copy and divide:

1. $8\overline{)32}$ $8\overline{)16}$ $9\overline{)72}$ $8\overline{)24}$ $6\overline{)48}$ $8\overline{)64}$ $8\overline{)56}$ $2\overline{)16}$

2. $7\overline{)56}$ $4\overline{)32}$ $8\overline{)72}$ $8\overline{)48}$ $8\overline{)80}$ $5\overline{)40}$ $3\overline{)24}$ $8\overline{)40}$

Give the answers to these examples orally. Watch the signs.

1.	$40 \div 8 =$	$8 \times 9 =$	$48 \div 8 =$	$8 \times 8 =$
2.	$72 \div 9 =$	$4 \times 8 =$	$16 \div 8 =$	$7 \times 8 =$
3.	$56 \div 8 =$	$9 \times 8 =$	$32 \div 8 =$	$8 \times 4 =$
4.	$48 \div 6 =$	$8 \times 5 =$	$56 \div ? = 8$	$8 \times ? = 48$
5.	$24 \div 3 =$	$2 \times 8 =$	$72 \div ? = 9$	$8 \times ? = 16$
6.	$64 \div 8 =$	$5 \times 8 =$	$40 \div ? = 8$	$6 \times 8 =$
7.	$21 \div 7 =$	$5 \times 3 =$	$28 \div ? = 4$	$7 \times 6 =$

Write the answers:

1. $7 \times 8 + 5 =$ $8 \times 8 + 7 =$ $9 \times 8 + 7 =$

2. 61 = — 8's + — 71 = — 8's + — 79 = — 8's + —

3. First study carefully the answers to Ex. 1 and 2. Then find the checks for the three parts of Ex. 2 in Ex. 1.

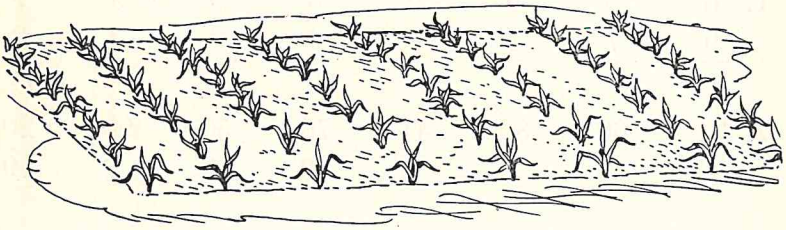
More Review Problems

1. Eight girls went on a picnic. They took 32 sandwiches. How many sandwiches were there for each girl if each had the same number?

2. If they took 3 cookies for each, how many cookies did they take? (See Prob. 1.)

3. Ann received 9¢ for each pint of berries that she picked. If she received 72¢ for the berries, how many pints did she pick?

4. Ralph has 8 rows of corn in his garden. If there are 8 plants in each row, how many corn plants are there in his garden?



5. David bought 8 pencils at 4¢ each. How much did he pay for them?

6. He sold the 8 pencils to Robert and William for 5¢ each. How much did he get for them? How much did he make? (See Prob. 5.)

7. Mr. Brown bought coal from the Ridge Coal Company. He paid $48 for 6 tons of coal. How much did each ton cost?

8. Mrs. Peters and her family used 56 eggs in one week. They used the same number of eggs each day. How many eggs did they use each day?

Using Nine in Multiplying and Dividing

Study these multiplication facts with 9:

2	3	4	5	6	7	8	9
9	9	9	9	9	9	9	9
18	27	36	45	54	63	72	81

9	9	9	9	9	9	9	9
7	3	5	1	6	2	4	8
63	27	45	9	54	18	36	72

Copy and multiply:

1.	6	9	9	9	5	9	9	7
	9	7	3	9	9	8	2	9
2.	31	60	80	41	70	50	90	20
	9	9	9	9	9	9	9	9

Study these division facts with 9:

2	3	4	5	6	7	8	9
9)18	9)27	9)36	9)45	9)54	9)63	9)72	9)81

9	9	9	9	9	9	9	9
8)72	2)18	1)9	7)63	3)27	4)36	6)54	5)45

Copy and divide:

1.	9)36	8)72	9)27	6)54	9)81	2)18	5)45	9)63
2.	7)63	4)36	9)54	9)72	9)45	9)18	3)27	9)90

Give the answers to these examples orally. Watch the signs.

1.	$45 \div 9 =$	$9 \times 5 =$	$54 \div 9 =$	$8 \times 9 =$
2.	$2 \times 9 =$	$72 \div 9 =$	$5 \times 9 =$	$27 \div 9 =$
3.	$72 \div 8 =$	$4 \times 9 =$	$18 \div 9 =$	$7 \times 9 =$
4.	$63 \div 9 =$	$3 \times 9 =$	$36 \div 9 =$	$9 \times 4 =$
5.	$6 \times 9 =$	$18 \div 2 =$	$9 \times 3 =$	$36 \div 4 =$
6.	$8 \times 9 =$	$81 \div 9 =$	$9 \times 2 =$	$18 \div 3 =$
7.	$9 \times 6 =$	$9 \times 7 =$	$9 \times 8 =$	$9 \times 9 =$

8. The answers to Ex. 7 are —, —, —, and —. The first answer is 54. If I add the 5 and 4 of 54, I will have 9. What do you know about the sums of the numbers in the other three answers?

Practice in Multiplying and Dividing

Multiply. Use an answer sheet.

1.	7	3	4	9	5	10	4	5
	5	6	4	9	2	8	7	9
2.	9	6	9	3	9	9	8	4
	6	3	4	3	7	3	5	2
3.	5	5	8	4	6	9	8	3
	3	6	7	3	6	8	4	5
4.	4	2	6	10	5	8	7	5
	6	9	7	4	7	2	9	5
5.	3	8	7	2	5	2	3	6
	4	3	6	8	4	7	9	2

Multiply. Use an answer sheet.

6.	6	9	8	6	7	5	4	2
	8	1	8	5	2	8	8	5
7.	7	6	2	7	9	9	8	4
	8	4	4	7	5	2	6	9
8.	2	7	4	3	6	8	7	3
	6	3	5	7	9	9	4	8

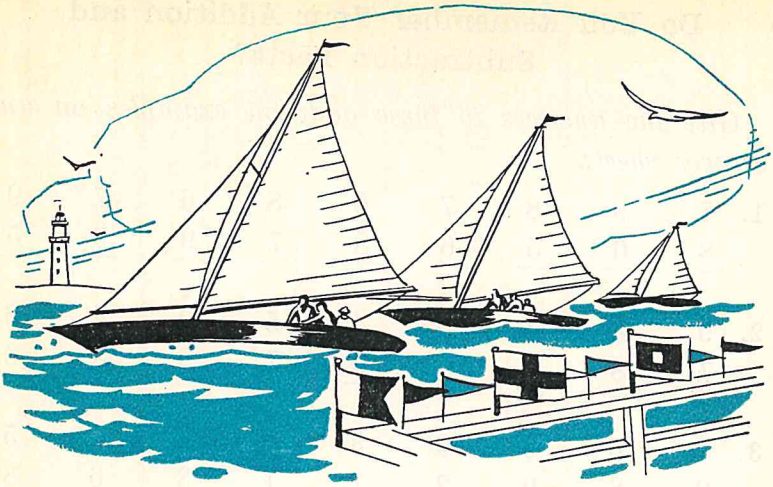
Divide. Use an answer sheet.

9.	6)24	4)28	8)32	3)27	4)16	9)27	7)35
10.	6)12	2)10	7)42	8)72	4)36	5)35	8)56
11.	3)24	9)45	5)30	9)63	6)54	8)24	7)21
12.	7)63	6)30	9)72	5)10	3)12	8)48	4)24
13.	5)40	9)81	6)18	7)56	9)18	5)25	3)21
14.	5)45	7)28	9)54	4)12	8)16	6)48	6)42

A Sail-Boat Race

1. There are 9 sail boats in the race. Each boat carries 3 people. How many people are there in all of the boats?

2. The float around which the boats sail has 9



flags on each of its 4 sides. How many flags are there on the float?

3. There are 54 people watching the race. Near the dock are the 9 cars in which they came. If each car brought the same number of people, how many were there in each one?

4. Near the shore there is a peanut and popcorn stand. In one hour the man sold 9 bags of popcorn at 5¢ each. How much did he get for them?

5. A large motor boat takes people riding. Each trip is 7 miles. How many miles does the boat travel in 9 trips?

6. The boat holds 9 passengers. How many trips must it take to give 36 people a ride?

7. A trip around the lake costs $2. How many tickets for this trip were sold if the ticket seller took in $18?

Do You Remember Your Addition and Subtraction Facts?

Give the answers to these addition examples on an answer sheet:

1.	7	9	8	7	9	8	6	7	9
	8	6	5	6	8	7	9	9	5
2.	9	8	7	5	4	5	3	4	6
	7	8	5	6	9	7	9	8	6
3.	9	6	5	9	3	9	8	4	5
	9	8	9	2	7	1	3	6	8
4.	9	8	2	4	9	4	7	8	8
	4	6	7	7	3	3	3	2	4
5.	8	7	6	5	2	2	1	3	6
	9	4	7	4	9	8	9	8	5

Give the answers to these subtraction examples on an answer sheet:

1.	15	15	13	13	17	15	15	16
	8	6	5	6	8	7	9	9
2.	16	16	12	11	13	12	12	12
	7	8	5	6	9	7	9	8
3.	18	14	14	11	10	10	11	10
	9	8	9	2	7	1	3	6

4.	13	14	9	11	12	9	10	10
	4	6	5	7	3	9	3	2
5.	17	11	13	9	11	10	10	11
	9	4	7	4	9	8	9	8

Problems That Have Two Steps

1. William eats his school lunches in the school cafeteria. They cost him $.22 each. How much will his lunches cost him each month? (Remember that he does not go to school on Saturday and Sunday and that a school month is four weeks.)

2. Father took Jane and Jimmie to the movies. He paid $.25 for each of their tickets and $.40 for his own. What did it cost him for the three of them to go to the movies?

3. Frank paid 24¢ for 8 Sunday papers. He sold the papers for 5¢ each. How much did he make on each paper?

What You Should Have Learned in This Chapter

If you have studied this chapter enough, you should be able to:

1. Read a thermometer.
2. Measure a liquid in cups, pints, quarts, and gallons.
3. Measure corn, apples, peaches, wheat, tomatoes, and other fruits and vegetables in pints, quarts, pecks, and bushels.
4. Tell what time it is.
5. Tell the number of days in a year, days in a week, weeks in a year, and months in a year.
6. Find lengths in inches, feet, and yards.
7. Tell the number of feet and yards in a mile.
8. Find weights in ounces, pounds, and tons.
9. Give the answers quickly in Diagnostic Test No. 38 on measures.
10. Give the answers quickly to all of the multiplication examples in Diagnostic Test No. 39.
11. Give the answers quickly to all of the division examples in Diagnostic Test No. 40.
12. Give the answers quickly to all of the problems in Diagnostic Tests No. 38 and 41.

1. See if you can finish tests 38-41 without making any errors. If so, you may omit the Remedial Practice (Sets 38-41) and study pages 286-288.

2. Did you make errors on the tests? If so, study the examples you do not know on the pages shown in **heavy type.**

3. Write the answers to the tests on an answer sheet. Try to do all of the problems correctly.

Diagnostic Test No. 38: Measures **269**

1. Is it colder when the thermometer is at 30° or 70°?

2. How many degrees warmer is it when the thermometer is at 90° than when it is at 60°?

3. 1 gal. = — qt.

4. 2 hr. = — min.

5. 3 da. = — hr.

6. 21 da. = — wk.

7. 1 yr. = — da.

8. 2 yr. = — wk.

9. 4 yr. = — mo.

10. 8 pk. = — bu.

11. 3 lb. = — oz.

12. 5 T. = — lb.

13. 3 ft. = — in.

14. 1 yd. = — ft.

15. 1 yd. = — in.

16. 1 mi. = — ft.

Diagnostic Test No. 39: Multiplication **269-270**

1.	7	9	4	9	4	6	5	9	5
	7	5	6	8	4	9	7	9	5
2.	8	7	5	8	5	6	7	6	4
	9	4	8	6	4	7	8	6	7
3.	8	5	4	7	6	8	4	6	7
	8	6	5	6	8	7	8	5	9
4.	4	9	6	9	8	5	9	8	7
	9	7	4	6	4	9	4	5	5

Diagnostic Test No. 40: Division **270**

1.	$4\overline{)16}$	$9\overline{)81}$	$5\overline{)20}$	$9\overline{)72}$	$6\overline{)24}$	$8\overline{)72}$
2.	$7\overline{)28}$	$8\overline{)64}$	$8\overline{)32}$	$9\overline{)63}$	$9\overline{)36}$	$8\overline{)56}$

3.	$7\overline{)63}$	$4\overline{)20}$	$7\overline{)56}$	$4\overline{)24}$	$7\overline{)49}$	$4\overline{)28}$
4.	$4\overline{)32}$	$9\overline{)54}$	$4\overline{)36}$	$8\overline{)48}$	$5\overline{)25}$	$7\overline{)42}$
5.	$6\overline{)54}$	$5\overline{)30}$	$6\overline{)48}$	$5\overline{)35}$	$6\overline{)42}$	$5\overline{)40}$
6.	$5\overline{)45}$	$6\overline{)36}$	$6\overline{)30}$	$9\overline{)45}$	$7\overline{)35}$	$8\overline{)40}$

Diagnostic Test No. 41: Important Problems 270-271

1. If Mother can make 5 baskets in 1 hour, how many baskets can she make in 7 hours?

2. How many 9¢ airplanes can Dick buy with 54¢?

3. Jean made 35 pieces of candy. Seven of her friends ate all of them. If each ate the same number of pieces, how many pieces did each girl eat?

4. Bob lives 7 blocks from school. If there are 8 houses in each block, how many houses does he pass on his way to school?

5. Jean made a scrapbook of airplane pictures. Each page held 4 pictures. How many pictures did she need for 6 pages?

6. There are 36 pictures in Jean's scrapbook. How many pages does it have if each page has 4 pictures?

7. Jack and Robert had a stand at the school fair. They sold 40 sticks of chewing gum. How many packages would that make if there are 5 sticks in each?

8. The boys had 72 plums to sell. They put them in baskets. How many baskets did they fill if each basket held 8 plums?

9. What will 7 picture post cards cost at 4¢ each?

Remedial Practice with Measures (Set 38)

1. A temperature of 30 degrees is lower than a temperature of 70 degrees. A temperature of 30 degrees is the colder.

2. 90 degrees − 60 degrees = 30 degrees. It is 30 degrees warmer at 90 degrees than at 60 degrees.

3. There are 4 quarts in 1 gallon.

4. 1 hour = 60 minutes. 2 hours = 120 minutes.

5. 1 day = 24 hours. 3 days = 72 hours.

6. 7 days = 1 week. 21 days = 3 weeks.

7. There are 365 days in each year except leap year which has 366 days.

8. 1 year = 52 weeks. 2 years = 104 weeks.

9. 1 year = 12 months. 4 years = 48 months.

10. 4 pecks = 1 bushel. 8 pecks = 2 bushels.

11. 1 pound = 16 ounces. 3 pounds = 48 ounces.

12. 1 ton = 2,000 pounds. 5 tons = 10,000 pounds.

13. 1 foot = 12 inches. 3 feet = 36 inches.

14. There are 3 feet in 1 yard.

15. There are 36 inches in 1 yard.

16. There are 5,280 feet in 1 mile.

Remedial Practice in Multiplying (Set 39)

1.	7	9	4	9	4	6	5	9	5
	7	5	6	8	4	9	7	9	5
	49	45	24	72	16	54	35	81	25
2.	8	7	5	8	5	6	7	6	4
	9	4	8	6	4	7	8	6	7
	72	28	40	48	20	42	56	36	28

3.	8	5	4	7	6	8	4	6	7
	8	6	5	6	8	7	8	5	9
	64	30	20	42	48	56	32	30	63
4.	4	9	6	9	8	5	9	8	7
	9	7	4	6	4	9	4	5	5
	36	63	24	54	32	45	36	40	35

Remedial Practice in Dividing (Set 40)

1.	$4\overline{)16}$	$9\overline{)81}$	$5\overline{)20}$	$9\overline{)72}$	$6\overline{)24}$	$8\overline{)72}$
2.	$7\overline{)28}$	$8\overline{)64}$	$8\overline{)32}$	$9\overline{)63}$	$9\overline{)36}$	$8\overline{)56}$
3.	$7\overline{)63}$	$4\overline{)20}$	$7\overline{)56}$	$4\overline{)24}$	$7\overline{)49}$	$4\overline{)28}$
4.	$4\overline{)32}$	$9\overline{)54}$	$4\overline{)36}$	$8\overline{)48}$	$5\overline{)25}$	$7\overline{)42}$
5.	$6\overline{)54}$	$5\overline{)30}$	$6\overline{)48}$	$5\overline{)35}$	$6\overline{)42}$	$5\overline{)40}$
6.	$5\overline{)45}$	$6\overline{)36}$	$6\overline{)30}$	$9\overline{)45}$	$7\overline{)35}$	$8\overline{)40}$

Remedial Practice in Important Problems (Set 41)

1. If Mother can make 5 baskets in 1 hour, she can make 7 times as many in 7 hours. 7×5 baskets $= 35$ baskets in 7 hours.

2. If Dick pays 9¢ for 1 airplane, he can buy 6 airplanes for 54¢. There are 6 nines in 54.

3. Seven girls ate 35 pieces of candy. Each girl ate the same number of pieces. Each girl ate 5 pieces of candy. There are 7 fives in 35.

4. If Bob passes 8 houses in each block, then in 7 blocks he passes 56 houses. 7×8 houses $= 56$ houses in 7 blocks.

5. If Jean needs 4 pictures for each page, she needs 24 pictures for 6 pages. 4×6 pictures $= 24$ pictures for 6 pages.

6. There are 36 pictures, and each page has 4 pictures. Nine pages will be needed for 36 pictures. There are 9 fours in 36.

7. There are 40 sticks of chewing gum and there are 5 sticks in each package. Forty sticks of chewing gum will make 8 packages. There are 8 fives in 40.

8. Seventy-two plums will fill 9 baskets. There are 9 eights in 72.

9. Seven picture post cards at 4¢ each will cost 28¢. $7 \times 4¢ = 28¢$. Seven 4's are 28.

10. What will 4 picture post cards cost at 7¢ each?

11. Jimmie has 27 marbles that he does not need. He wishes to divide them equally among David, Sam, and Harry. How many marbles should he give each?

12. At the candy store chocolate mints are 5¢ for 3. How many mints can Jane buy for 15¢? Hint: Find the number of 5's in 15. Then multiply the answer by 3.)

NOTE TO THE TEACHER: If many pupils have already done the work on pages 273-291, omit these pages for the rest of the class and go to page 292 (Are You Ready for the Fifth Grade?). Then proceed to the promotion tests.

Improvement Test No. 8

1. Is it colder when the thermometer is at 90° or when it is at 50°? Why?

2. What time is it when the long hand of the clock is on 12 and the short hand is on 6?

3. From 10:45 A.M. to 11:45 A.M. is — minutes.

4. Grandfather gathered 16 bushels of onions out of his large garden on the farm. How many pecks of onions did he gather?

5. Mr. Brown bought 9 tons of coal. How many pounds of coal did he buy? Remember there are 2,000 pounds in a ton.

6. A milkman delivers 180 quarts of milk every morning. How many gallons does he deliver in a week?

7. If Mr. Brown steps 3 feet with every step, how many steps will he take in a mile? (5,280 feet = 1 mile.)

8. How many yards will Mr. Brown walk in a mile? (See Prob. 7. 1,760 yards = 1 mile.)

9. A rectangle has — sides.

10. A triangle has — sides.

Were you in the hard-workers' group in this chapter?

Scores

Hard-workers

0 1 2 3 4 5 6 7 8 9 10

CHAPTER 9

ARE YOU READY FOR THE FIFTH GRADE?

The Family Garden

1. Father calls the vegetable garden, the family garden. They have 6 rows of beans. Each row is seventeen feet long. How many feet are there in the 6 rows?

2. Three bean plants in each of 4 rows have grown taller than the others. How many bean plants have grown taller than the others?

3. There are 8 short rows of turnips in the family garden. Each row is 7 feet long. How many feet are there in the 8 rows?

4. Father and Mother set out 5 rows of cabbage plants. Each row had 12 plants in it. How many cabbage plants did they set out?

Practice in Carrying in Multiplication

Give the answers orally:

1.	$3 \times 4 + 2$	$8 \times 3 + 3$	$3 \times 8 + 3$
2.	$7 \times 3 + 4$	$8 \times 2 + 7$	$3 \times 6 + 7$
3.	$6 \times 2 + 1$	$5 \times 6 + 3$	$6 \times 4 + 6$
4.	$4 \times 9 + 4$	$4 \times 7 + 5$	$9 \times 4 + 4$
5.	$2 \times 6 + 6$	$2 \times 7 + 6$	$6 \times 3 + 7$
6.	$3 \times 7 + 3$	$4 \times 6 + 5$	$5 \times 7 + 8$
7.	$7 \times 4 + 4$	$4 \times 3 + 5$	$6 \times 5 + 4$

Practice in Multiplying

Multiply and use an answer sheet:

8.	15	36	52	43	39	48	29
	3	5	6	4	2	3	4
9.	642	561	822	891	152	681	572
	4	5	4	5	4	5	4
10.	529	648	352	934	862	753	885
	6	7	6	7	6	7	6
11.	472	536	749	680	253	794	592
	7	6	7	6	7	6	7

Copy and multiply by 6 and then by 7:

12.	\$.15	\$.23	\$1.25	\$1.67	\$1.50	\$2.10
13.	\$4.56	\$5.27	\$6.92	\$8.40	\$6.74	\$3.47
14.	\$2.68	\$9.21	\$8.53	\$1.90	\$8.44	\$9.76
15.	487	563	690	385	673	860
16.	204	759	740	801	171	506

Copy and multiply by 4 and then by 5:

17.	$1.25	$2.87	$3.10	$6.90	$12.50
18.	$15.12	$17.86	$21.35	$27.15	$32.45
19.	$56.20	$73.29	$63.96	$28.41	$85.37
20.	$14.08	$61.19	$37.84	$87.95	$38.64

21.	3745	2697	6587	1973	2893	3561
22.	8674	3192	5916	8723	2657	9805
23.	6473	2816	9003	9024	1320	6143

Multiply and use an answer sheet:

24.	846	638	576	842	619	703	987
	7	6	7	4	5	6	7
25.	549	785	762	538	501	627	479
	40	70	50	60	70	50	40

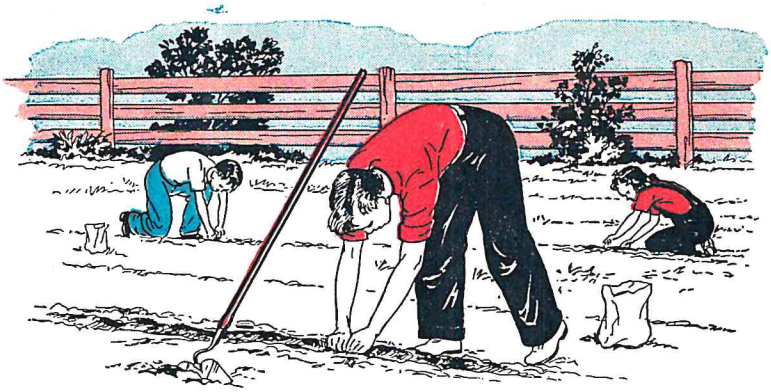
26.	$9.62	$8.61	$6.33	$1.89	$4.02	$8.84
	4	7	5	6	7	4
27.	$8.77	$6.69	$8.54	$9.00	$7.83	$5.38
	5	7	6	6	5	7

Copy and multiply:

Before doing Ex. 28, look at its six parts. Beginning with this first part will the answers to the six parts grow smaller or larger? Why?

28.	273	381	382	465	739	818
	46	46	46	46	46	46
29.	351	954	867	628	157	945
	57	57	57	57	57	57

Uncle Henry's Garden



1. Jane and Jimmie went out to Uncle Henry's farm early one Saturday morning to help him make a garden. Uncle Henry had a much larger garden than Jane and Jimmie. They set out 144 tomato plants in 6 rows. They put the same number of plants in each row. How many plants were there in each row?

2. It took them 54 minutes to set out the 6 rows of tomato plants. It took the same number of minutes to set out each row. How many minutes did it take them to set out each row?

3. If it took 28 minutes to plant 7 rows of peas, how many minutes did it take to plant each row?

4. Uncle Henry has 54 rows of vegetables in his garden. If $\frac{1}{6}$ of these rows are planted in sweet corn, how many rows of sweet corn does he have?

5. They spent 27 minutes planting the 9 rows of sweet corn. On the average how many minutes did it take to plant one row?

6. Each row of sweet corn is 25 feet long. How many feet are there in the 9 rows?

7. Jane planted $\frac{1}{3}$ of the 54 rows in Uncle Henry's garden. How many rows did she plant?

8. They had 135 potatoes. They wanted to plant the same number in each of 7 rows. How many potatoes did they plant in each row? How many potatoes were left over?

9. If they spent 35 minutes in planting the 7 rows of potatoes, how many minutes did it take to plant each row? How many minutes did it take to plant 4 rows?

10. They planted 7 rows of white beans. Each row is 25 feet long. How many feet are there in the 7 rows of beans?

11. If it took 42 minutes to plant the 7 rows of white beans, how many minutes did each row take? Check your answer.

12. They planted 4 rows of turnips. Each row is 25 feet long. How many feet are there in the 4 rows of turnips?

13. How many minutes did it take to plant each of the 4 rows of turnips if it took 24 minutes to plant the four rows?

14. They have already planted 40 of the 54 rows of vegetables. How many rows are there yet to be planted?

15. If they plant 2 more different kinds of vegetables, how many rows can they plant of each kind if they have the same number of rows of each? Will they have any rows left to plant? (See Prob. 14.)

Practice in Dividing by Six and Seven

Copy, divide, and check:

1.	$6\overline{)54}$	$7\overline{)49}$	$6\overline{)48}$	$7\overline{)42}$	$6\overline{)36}$	$7\overline{)63}$
2.	$6\overline{)127}$	$7\overline{)217}$	$6\overline{)198}$	$7\overline{)154}$	$6\overline{)84}$	$7\overline{)105}$
3.	$6\overline{)336}$	$7\overline{)847}$	$6\overline{)420}$	$7\overline{)217}$	$6\overline{)726}$	$7\overline{)147}$
4.	$6\overline{)252}$	$7\overline{)588}$	$6\overline{)492}$	$7\overline{)336}$	$6\overline{)150}$	$7\overline{)455}$
5.	$6\overline{)198}$	$7\overline{)672}$	$6\overline{)330}$	$7\overline{)595}$	$6\overline{)594}$	$7\overline{)406}$

Give the answers orally:

6. $38 \div 6 =$ — and a remainder of —.
7. $31 \div 7 =$ — and a remainder of —.
8. $45 \div 6 =$ — and a remainder of —.
9. $24 \div 7 =$ — and a remainder of —.
10. $32 \div 6 =$ — and a remainder of —.
11. $17 \div 7 =$ — and a remainder of —.
12. $53 \div 6 =$ — and a remainder of —.
13. $61 \div 7 =$ — and a remainder of —.
14. $17 \div 6 =$ — and a remainder of —.
15. $48 \div 7 =$ — and a remainder of —.
16. $22 \div 6 =$ — and a remainder of —.
17. $68 \div 7 =$ — and a remainder of —.
18. $35 \div 6 =$ — and a remainder of —.
19. $60 \div 7 =$ — and a remainder of —.
20. $59 \div 6 =$ — and a remainder of —.
21. $65 \div 7 =$ — and a remainder of —.

Delivering Milk

1. One of Grandfather's cows gives 25 gallons of milk a week. How many gallons of milk does she give in 7 weeks? In 9 weeks?

2. Grandfather takes his milk to town in 7-gallon cans. If he has 11 of these cans full of milk on his truck, how many gallons of milk does he have on his truck? How many gallons are there in 15 cans full of milk?

3. Grandmother uses 5 quarts of milk a day. How many quarts does she use in a week? In 9 weeks?

4. Grandfather sold 6 quarts of milk to the man at the grocery store. He got $.13 a quart. How much did he get for the 6 quarts of milk?

5. Grandfather delivers a 7-gallon can of milk to each of 27 different stores. How much milk is this?

6. Jimmie milks a cow that gives 3 gallons of milk each day. When he has milked the cow 37 days, he has milked how many gallons?

7. After delivering all of his milk, Grandfather bought feed, salt, and rope that he needed. He bought 3 sacks of feed. Each sack weighed 98 pounds. How much did all of the feed weigh? How much did 5 sacks weigh?

8. For his cows he bought 3 blocks of salt that weighed 67 pounds each. How much did the 3 blocks weigh?

9. Grandfather bought 5 pounds of rope. It cost 17¢ a pound. How much did he pay for it?

10. How much will 164 pounds of salt cost at 2¢ a pound? How much will 343 pounds cost?

More Practice in Dividing by Six and Seven

Answer orally:

1. 37 ÷ 6 = — and — left over.
2. 44 ÷ 7 = — and — left over.

Copy, divide, and check. In checking remember to add the remainders.

3.	6)758	7)864	6)575	7)689	6)127	7)369
4.	7)879	6)578	7)673	6)987	7)876	6)743
5.	6)735	7)896	7)578	7)834	6)778	7)943
6.	7)874	6)577	6)733	7)367	6)536	7)877
7.	6)537	7)789	6)789	7)936	7)485	6)897
8.	7)684	6)757	6)349	7)396	6)217	6)769

Problems with Two or More Parts to the Answer

1. Father cultivated 4 rows of beans and 3 rows of carrots in 20 minutes. How many rows of beans and how many rows of carrots can be cultivated in twice this many minutes? How many parts does the answer have?

2. Mother hoed 2 rows of beans and 4 short rows of turnips in 30 minutes. How many rows of beans and turnips could she hoe in half as much time? How many parts does this answer have?

3. Jimmie pulled the grass and weeds out of 2 rows of corn and 6 rows of potatoes in 20 minutes. How many rows of corn and how many rows of potatoes could Jimmie pull the weeds out of in $\frac{1}{2}$ as much time? How many parts does this answer have?

4. Father bought 4 dozen tomato plants for the family garden. He paid 23¢ a dozen for them. How much did he pay for all the tomato plants?

5. He paid the 92¢ with as large pieces of money as he could. How many half dollars, quarters, nickels, dimes, and pennies did he give the man? How many parts does this answer have?

6. If Father had paid for the plants with a $1 bill, and his change had been in nickels and pennies, how many nickels and pennies would the man have given him in change? How many parts does this answer have? (See Prob. 5.)

7. If Father's change had been in pennies, how many would he have gotten? How many parts are there in this answer? (See Prob. 6.)

Practice in Multiplying with Eight and Nine

Copy these examples and do them. Notice how Prob. 2 is a check for Prob. 1, Prob. 4 is a check for Prob. 3, and so on.

1.	2.	3.	4.	5.	6.
89		76		98	
×9	9)801	×8	8)608	×7	7)686

7.	8.	9.	10.	11.	12.
186		278		760	
×8	8)1488	×9	9)2502	×8	8)6080

Notice how these examples are very much alike:

13.	14.	15.	16.	17.	18.
99	78	64	59	98	76
78	99	59	64	76	98

19.	20.	21.	22.	23.	24.
46	89	37	98	26	78
89	46	98	37	78	26

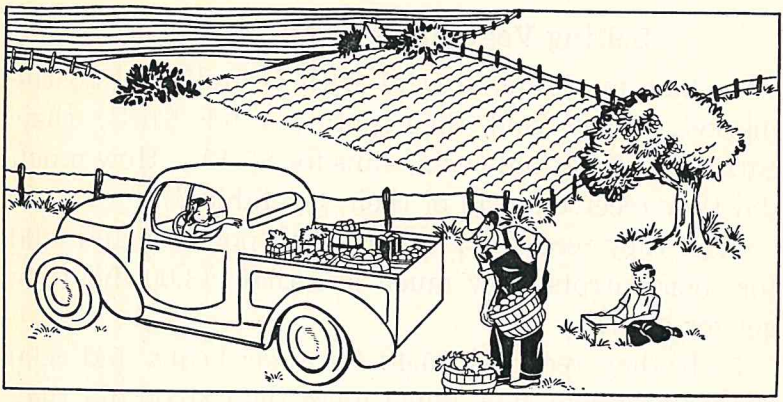
25.	26.	27.	28.	29.	30.
98	20	800	40	80	60
20	98	40	800	60	80

31. The answer to Ex. 29 is 4800. The answer to Ex. 30 is also —. Why?

Copy these examples and multiply. Remember to place the cents' point and dollar sign in the right places in the answers.

32.	33.	34.	35.	36.	37.
$2.89	$1.98	$ .87	$3.79	$5.89	$9.98
87	76	96	84	69	67

Grandfather's Vegetable Garden



1. On the first week-end after school was out in the spring, Mother, Jane, and Jimmie went out to Grandfather's farm. Grandfather had the largest garden that Jane and Jimmie had ever seen. In fact it was so large that they called it a truck farm. Jane, Jimmie and Grandfather are shown in the picture getting ready to go to the market.

They put on the truck enough little baskets of potatoes to sell for $1.84 at 8¢ a basket. How many baskets did they have?

2. They put on enough bunches of carrots to sell for $.90 at 9¢ a bunch. How many bunches of carrots did they have?

3. They put 108 pounds of green beans in 9 boxes. How many pounds of beans did they put in each box if each box had the same number of pounds in it?

4. Grandfather wanted to get $5.40 for the 9 boxes of beans. How much should he charge for each in order to get this much for them?

Selling Vegetables at the Market

1. Jane and Jimmie went with Grandfather to the market. They sold their potatoes for $1.84, their carrots for $.90, and their beans for $5.40. How much did they receive for all of their vegetables?

2. If they received $1.84 for their potatoes and $.90 for their carrots, how much less than $3.00 did they get for both?

3. If they received $5.40 for their beans and $.90 for their carrots, how much more than $6.00 did they get for both?

4. They sold $.48 worth of potatoes to one man. Another man bought $1.20 worth of beans. A little boy bought $.60 worth of beans, and a woman bought $.60 worth. One woman bought $.18 worth of carrots, and a little girl bought $.36 worth. How much did they receive from these six people for vegetables? What is the average amount of money they received from each of these six people? (Hint: You must divide the sum by 6 to find the average.)

5. The farmer who sold vegetables from a truck beside Grandfather's truck sold $.75 worth of vegetables to one man; $1.00 worth to another; and $.86 worth to another. What was the average amount he received from the three people?

Mixed Practice

Add down each column and check by adding up. Use an answer sheet.

1.	5649	95	8654	913	9787
	374	849	275	867	8756
	15	1565	859	58	196
	657	48	86	1567	754
2.	8336	179	5358	2483	1846
	4951	28	419	187	453
	4024	6	107	995	5487
	8863	9748	99	376	2817
	57	89	67	59	78

Subtract and check. Use an answer sheet.

3.	4842	9164	2480	4188	3452
	1463	9086	1836	2756	1492
4.	9675	1586	4877	3564	3667
	5736	987	4687	1374	2594
5.	4653	8674	6578	4863	3821
	2765	4869	4867	3168	1257

Copy and multiply. Check the examples in the first row.

6.	364	567	681	476	248
	46	82	73	97	57
7.	675	273	465	978	216
	57	93	84	28	17

Divide and check:

8.	$9\overline{)783}$	$8\overline{)448}$	$7\overline{)257}$	$6\overline{)672}$	$9\overline{)234}$
9.	$7\overline{)2268}$	$8\overline{)4504}$	$6\overline{)2754}$	$9\overline{)2322}$	$8\overline{)3712}$

More Practice in Dividing with Eight and Nine

Copy and divide:

1.	$8\overline{)488}$	$9\overline{)909}$	$8\overline{)560}$	$9\overline{)279}$	$8\overline{)808}$	$8\overline{)189}$
2.	$8\overline{)296}$	$9\overline{)667}$	$8\overline{)656}$	$9\overline{)396}$	$8\overline{)192}$	$9\overline{)567}$
3.	$8\overline{)272}$	$9\overline{)855}$	$8\overline{)432}$	$9\overline{)783}$	$8\overline{)792}$	$9\overline{)504}$

Give the answers orally to these examples:

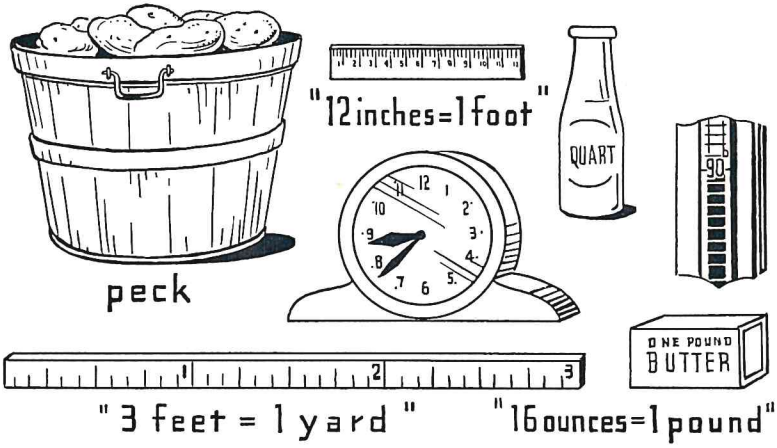
4. $20 \div 8 =$ — and a remainder of —.
5. $89 \div 9 =$ — and a remainder of —.
6. $45 \div 8 =$ — and a remainder of —.
7. $33 \div 9 =$ — and a remainder of —.
8. $67 \div 8 =$ — and a remainder of —.
9. $51 \div 9 =$ — and a remainder of —.

10. $30 \div 8 =$ — and a remainder of —.
11. $67 \div 9 =$ — and a remainder of —.
12. $33 \div 8 =$ — and a remainder of —.
13. $20 \div 9 =$ — and a remainder of —.
14. $42 \div 9 =$ — and a remainder of —.
15. $50 \div 8 =$ — and a remainder of —.
16. $75 \div 9 =$ — and a remainder of —.
17. $78 \div 8 =$ — and a remainder of —.
18. $57 \div 9 =$ — and a remainder of —.
19. $57 \div 8 =$ — and a remainder of —.

Copy and divide:

20.	$8\overline{)796}$	$9\overline{)848}$	$8\overline{)892}$	$9\overline{)890}$	$8\overline{)687}$
21.	$9\overline{)709}$	$8\overline{)679}$	$9\overline{)878}$	$8\overline{)670}$	$9\overline{)897}$
22.	$8\overline{)648}$	$8\overline{)890}$	$8\overline{)654}$	$9\overline{)378}$	$8\overline{)1273}$
23.	$9\overline{)730}$	$8\overline{)970}$	$8\overline{)770}$	$9\overline{)875}$	$8\overline{)1270}$
24.	$8\overline{)980}$	$9\overline{)640}$	$8\overline{)899}$	$9\overline{)847}$	$8\overline{)1330}$
25.	$9\overline{)890}$	$8\overline{)630}$	$9\overline{)670}$	$8\overline{)570}$	$9\overline{)740}$
26.	$8\overline{)468}$	$9\overline{)863}$	$8\overline{)730}$	$9\overline{)750}$	$8\overline{)975}$
27.	$9\overline{)679}$	$9\overline{)370}$	$8\overline{)903}$	$9\overline{)708}$	$8\overline{)410}$
28.	$8\overline{)906}$	$8\overline{)703}$	$9\overline{)404}$	$9\overline{)605}$	$8\overline{)701}$

Measuring Things



1. Jane pulled a carrot out of her garden which was 6 inches long. Was the carrot $\frac{1}{2}$ of a foot long?

2. Each of the rows in Jimmie's garden is 9 yards long. How many feet are there in each row?

3. Uncle Henry dug 4 pecks of potatoes out of each of his 7 rows of potatoes. How many bushels of potatoes did he dig?

4. Father bought 6 pounds of butter from Aunt Mary. How many ounces of butter did he get?

5. The milkman leaves 3 quarts of milk at Jimmie's house each morning. How many gallons does he leave in 4 days? How many quarts?

6. Jane and Jimmie left home to go to school this morning when the clock looked like the clock in the picture. Was it later than 8:30 when they went to school?

7. Read the thermometer in the picture.

Parts of Things

1. Jane picked 2 baskets of beans in her garden. How many pounds of beans did she pick if each basket weighed 10 pounds?

2. Jimmie's garden had 14 rows in it. He cut the weeds out of $\frac{1}{2}$ of the rows. Out of how many rows did he cut the weeds?

3. Then Jane cut the weeds out of $\frac{1}{2}$ of the 14 rows for Jimmie. Out of how many rows did she cut the weeds? Did Jane and Jimmie together cut all the weeds in Jimmie's garden? (See Prob. 2.)

4. Jane and Jimmie each picked the tomatoes from $\frac{1}{3}$ of Uncle Henry's 6 tomato rows. How many rows did each one pick? How many rows did both of them pick?

5. Jane and Jimmie each picked $\frac{1}{3}$ of the rows of beans in Father's and Mother's garden. How many thirds did they pick together?

6. How many thirds are there in the *whole* garden? If there are 3 thirds and Jane and Jimmie picked 2 thirds, how many thirds are left for Father and Mother to pick?

7. Father gave Jane and Jimmie each 4 half dollars for helping Mother and him make the garden. How many dollars did he give each one? How many dollars did he give both?

8. Mary has 4 quarters. How many dollars does she have?

9. Jimmie has 20 dimes. How many dollars do these dimes make?

Practice with Fractions

Find $\frac{1}{2}$ of each of these numbers:

1. 88 76 124 684 864 358 1206

Find $\frac{1}{3}$ of each of these numbers:

2. 36 402 1104 1692 2109 108 39

Find $\frac{1}{4}$ of each of these numbers:

3. 176 152 248 1368 1728 716 84

Find $\frac{1}{5}$ of each of these numbers:

4. 25 505 1005 305 4550 240 430

Find $\frac{1}{6}$ of each of these numbers:

5. 72 804 2202 3396 4206 216 78

Find $\frac{1}{8}$ of each of these numbers:

6. 352 304 496 2736 3456 1432 168

Tell which of these pairs of fractions are equal. Then tell why you think they are equal.

a. $\frac{1}{2}$ and $\frac{2}{4}$
b. $\frac{3}{4}$ and $\frac{6}{8}$
c. $\frac{3}{4}$ and $\frac{7}{8}$
d. $\frac{1}{3}$ and $\frac{3}{6}$
e. $\frac{2}{3}$ and $\frac{4}{6}$
f. $\frac{2}{3}$ and $\frac{5}{6}$
g. $\frac{2}{6}$ and $\frac{1}{3}$
h. $\frac{6}{8}$ and $\frac{3}{4}$
i. $\frac{1}{4}$ and $\frac{2}{8}$

Read each of these fractions and tell how many of its kind it will take to make a whole. For example, how many halves make a whole, how many thirds, and so on?

1. $\frac{1}{2}$ $\frac{2}{3}$ $\frac{3}{4}$ $\frac{2}{5}$ $\frac{5}{6}$ $\frac{7}{8}$ $\frac{4}{5}$ $\frac{3}{6}$ $\frac{2}{4}$

2. $\frac{1}{6}$ $\frac{3}{5}$ $\frac{1}{4}$ $\frac{5}{8}$ $\frac{2}{6}$ $\frac{1}{5}$ $\frac{4}{6}$ $\frac{6}{8}$ $\frac{1}{3}$

3. $\frac{1}{8}$ $\frac{3}{4}$ $\frac{5}{6}$ $\frac{3}{5}$ $\frac{2}{8}$ $\frac{2}{2}$ $\frac{3}{8}$ $\frac{3}{3}$ $\frac{4}{8}$

Addition Review

Add and check as quickly as you can:

1.	2.	3.	4.	5.	6.
678	9876	79	890	8970	99
956	5070	96	567	6006	88
349	4593	58	768	5408	54
654	5687	94	980	89	76
856		46	483	5867	34
		90			49

7.	8.	9.	10.	11.	12.
8956	786	989	6879	9	78
783	907	78	7080	8	95
765	800	96	8897	9	59
49	900	8	7625	7	87
879	679	94		6	64
		67		4	99

Subtraction Review

Subtract and check as quickly as you can:

1.	2.	3.	4.	5.
8967	9867	3687	9867	8756
4653	5604	2563	2246	3435

6.	7.	8.	9.	10.
7845	7890	7856	9957	4874
5960	3709	3498	6799	3489

Subtract and check quickly:

11.	12678	13456	25498	17890	15869
	8899	8578	19589	9989	9970

Are You Ready for the Fifth Grade?

If you are ready to go to the fifth grade, you should be able to:

1. Read and write numbers up to 99,999.
2. Write number words to 100.
3. Count by 1's, 5's, and 10's.
4. Use Roman numerals I through XXXIX.
5. Tell how much larger or smaller one number is than another.
6. Use correctly all of the addition, subtraction, multiplication, and division facts.
7. Add columns of figures.
8. Subtract large numbers.
9. Multiply large numbers by two-figure numbers.
10. Divide large numbers by one-figure numbers.
11. Check all examples and problems.
12. Work problems that go back to other problems for some of the numbers. Work problems that ask two questions. Work problems that have two or more parts to the answer and problems that have two steps.
13. Tell the time on a clock or a watch.
14. Count money by pennies, nickels, dimes, quarters, half dollars, and dollars.
15. Measure with a foot rule, using inches and feet.
16. Measure with a yardstick, using feet and yards.
17. Use a calendar and find dates on it.
18. Weigh things, using ounces, pounds, and tons.
19. Read a thermometer.
20. Use cups, pints, quarts, and gallons in measuring.

21. Use the dollar sign and the cents' point in adding, subtracting, multiplying, and dividing.

22. Use pecks and bushels in measuring.

23. Find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, and $\frac{1}{8}$ of a number or of a number of things.

24. Read simple fractions.

25. Understand the meaning of a fraction.

26. Find the average.

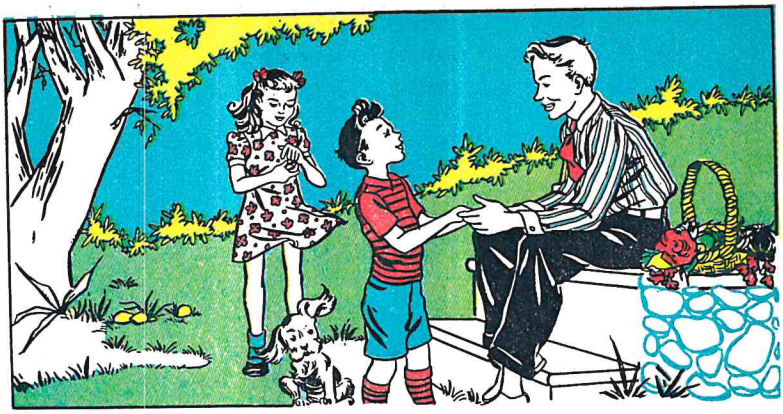
27. Use these signs: $+$, $-$, $\times$, $\div$, $=$, ¢, and \$.

28. Estimate whether your answer is very much too large or too small in adding, subtracting, and multiplying.

Can You Climb the Ladder?

Can you climb this ladder and do the arithmetic work in the fifth grade? If so, you should give the correct answers to all the examples in these promotion tests. If you come to an example or problem you cannot work, leave it and go on to the next one. Write the answers to tests 1 and 3 on an answer sheet. Check each example or problem before you leave it, so that it will be correct.

Promotion Test No. 1



1. Jane planted 5 rows of beans in her garden. If her father paid her $.95 for all the beans she raised, how much did she get for the beans in each row?

2. If she spent $.28 for the beans that she planted, how much did she make on her beans? (See Prob. 1.)

3. Father paid Jimmie 8¢ a head for his lettuce. How much did Father pay Jimmie for 17 heads of lettuce? How much less than $2.00 did Jimmie get for 17 heads of lettuce?

4. Father gave Jimmie the largest pieces of money that he could in paying him $1.36 for the lettuce. How many dollars, quarters, dimes, and pennies did he give Jimmie?

5. Father paid Jane $.36 for the carrots in one row; $.19 for those in another; $.28 for those in another; and $.57 for those in the last row. How much did she average for a row of carrots?

Promotion Test No. 2

Add down each column. Use an answer sheet.

1.	2.	3.	4.	5.
2	6	6	8	4
6	5	6	4	9

6.	7.	8.	9.	10.
5	7	75	39	560
7	6	17	85	42

11.	12.	13.	14.	15.
730	895	199	984	849
510	120	890	333	626

16.	17.	18.	19.	20.
27	58	38	98	78
42	47	55	48	942
37	73	70	78	5
93	89	97	57	86

Promotion Test No. 3

Subtract. Use an answer sheet.

1.	2.	3.	4.	5.
11	14	13	12	12
5	9	8	7	4

6.	7.	8.	9.	10.
36	176	68	892	479
25	30	20	820	208

Subtract. Use an answer sheet.

11.	**12.**	**13.**	**14.**	**15.**
1259	1093	1340	1587	1676
529	650	600	767	856
16.	**17.**	**18.**	**19.**	**20.**
1785	1694	1668	1768	1575
943	773	947	832	925
21.	**22.**	**23.**	**24.**	**25.**
1420	1515	1474	1224	1295
810	601	614	721	634
26.	**27.**	**28.**	**29.**	**30.**
1033	1496	1177	1389	12330
731	511	764	534	3385
31.	**32.**	**33.**	**34.**	**35.**
11201	11012	10010	4123	4123
7834	8223	8116	3876	2765

Why is the answer to Ex. 34 smaller than the answer to Ex. 35?

36.	**37.**	**38.**	**39.**	**40.**
13023	14190	10403	21023	60001
4587	6392	7218	7814	2364

Promotion Test No. 4

1. What is the time on a clock when the big hand is at 12 and the little hand is at 6?

2. What is the time on a watch when the big hand is at 3 and the little hand is a little past 9?

3. What time is it when the big hand is at 10 and the little hand is almost at 2?

4. How much money do 3 half dollars, 5 quarters, and 10 pennies make?

5. One of the rows in Jane's garden is 27 feet long. How many inches are there in this row?

6. One of the rows in the family garden is 27 feet long. How many yards are there in this row?

7. How many months are there in a year?

8. Jane and Jimmie plan to spend 28 days with their grandfather and grandmother on the farm when school is out. How many weeks do they plan to spend there?

9. Find the year, month, day of the month, and day of the week on your school calendar.

10. Aunt Mary churned 2 pounds of butter Saturday. How many ounces of butter did she churn?

11. Jimmie got 2 pecks of onions out of his garden. How many quarts of onions did he get?

12. Jane and Jimmie picked 2 bushels of beans from both their gardens. How many pecks of beans did they pick?

13. If Jane picked 5 pecks of the beans, how many pecks did Jimmie pick? (See Prob. 12.)

Promotion Test No. 5

Copy and multiply:

1.	2.	3.	4.	5.	6.
2	4	6	4	70	37
9	8	8	9	6	9

7.	8.	9.	10.	11.	12.
76	80	310	156	540	231
10	89	40	9	12	72

13.	14.	15.	16.	17.	18.
123	234	789	456	789	479
56	37	34	34	12	68

19. $10 \times 123 =$ **20.** $67 \times 600 =$

21. $25 \times 400 =$ **22.** $10 \times 359 =$

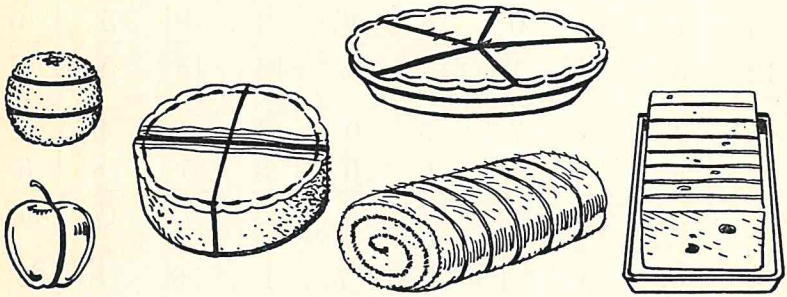
Promotion Test No. 6

Copy and divide:

1.	2.	3.	4.	5.	6.
$3\overline{)21}$	$4\overline{)12}$	$6\overline{)24}$	$7\overline{)49}$	$8\overline{)48}$	$9\overline{)36}$
7.	**8.**	**9.**	**10.**	**11.**	**12.**
$3\overline{)69}$	$2\overline{)46}$	$2\overline{)188}$	$4\overline{)348}$	$3\overline{)90}$	$7\overline{)420}$
13.	**14.**	**15.**	**16.**	**17.**	**18.**
$2\overline{)1730}$	$3\overline{)2595}$	$5\overline{)3210}$	$4\overline{)3144}$	$5\overline{)3485}$	$5\overline{)1008}$
19.	**20.**	**21.**	**22.**	**23.**	**24.**
$5\overline{)4265}$	$6\overline{)4770}$	$7\overline{)6545}$	$8\overline{)7384}$	$8\overline{)6820}$	$9\overline{)8577}$

25.	**26.**	**27.**	**28.**	**29.**	**30.**
7)5894	2)142	5)572	8)5920	6)2592	4)209
31.	**32.**	**33.**	**34.**	**35.**	**36.**
3)2833	2)40	4)3124	3)907	8)7463	9)8974
37.	**38.**	**39.**	**40.**	**41.**	**42.**
8)7288	6)4320	7)6517	9)8280	5)4145	4)2568

Promotion Test No. 7



1. Tell which of the things in the picture is cut into halves, thirds, fourths, fifths, sixths, and eighths.

2. One-fourth of Jimmie's 4 rows of lettuce seeds came up long before any of the others came up. How many rows came up early?

3. Jimmie pulled 72 small radishes out of one short row. He ate $\frac{1}{8}$ of them. How many did he eat?

4. Read these fractions: $\frac{3}{4}$, $\frac{7}{8}$, $\frac{2}{3}$, $\frac{4}{5}$, $\frac{1}{2}$, $\frac{6}{8}$.

5. How many thirds make a whole?

6. How many fourths make a whole?

7. How many fifths make a whole?

8. How many sixths make a whole?

9. How many eighths make a whole?

10. Jane wanted to buy a large doll, but she had only $\frac{1}{4}$ enough money with which to buy it. Father gave her $\frac{1}{4}$ of what the doll cost, Jimmie gave her $\frac{1}{4}$, and Mother gave her $\frac{1}{4}$. How many fourths did she have then? How many fourths make a whole? Did she have enough money to buy the doll?

Addition Facts to Be Mastered

8	2	3	1	6	4	9	5	0	7
4	1	6	0	5	1	3	8	5	6
12	3	9	1	11	5	12	13	5	13
7	4	6	7	5	0	4	2	9	1
0	4	6	1	9	6	8	5	8	5
7	8	12	8	14	6	12	7	17	6
2	3	9	4	2	7	1	6	8	0
8	7	4	6	0	7	4	9	2	8
10	10	13	10	2	14	5	15	10	8
1	3	6	4	2	3	0	5	8	6
1	3	0	7	6	2	1	7	6	2
2	6	6	11	8	5	1	12	14	8
9	3	8	7	1	5	7	2	4	3
5	8	9	2	6	3	8	4	9	0
14	11	17	9	7	8	15	6	13	3
6	5	8	6	9	8	0	7	2	9
4	6	0	1	6	3	4	4	9	9
10	11	8	7	15	11	4	11	11	18

0	3	5	1	9	4	6	0	8	1
9	4	2	3	7	2	8	7	7	9
9	7	7	4	16	6	14	7	15	10
7	3	1	4	6	2	4	3	9	5
5	9	7	5	3	2	0	5	1	4
12	12	8	9	9	4	4	8	10	9
2	0	5	0	6	4	8	7	9	8
7	2	1	3	7	3	1	3	0	5
9	2	6	3	13	7	9	10	9	13
9	5	3	2	7	1	5	0	8	1
2	0	1	3	9	8	5	0	8	2
11	5	4	5	16	9	10	0	16	3

Subtraction Facts to Be Mastered

9	12	11	9	7	11	13	8	15	3
6	4	8	4	5	2	9	3	7	0
3	8	3	5	2	9	4	5	8	3
15	9	10	1	14	6	16	12	9	2
6	9	9	0	7	1	8	3	5	1
9	0	1	1	7	5	8	9	4	1
14	13	3	7	8	6	12	7	14	5
5	7	2	1	6	5	8	3	9	0
9	6	1	6	2	1	4	4	5	5
10	6	9	18	2	9	11	8	13	2
6	6	1	9	0	8	3	5	6	2
4	0	8	9	2	1	8	3	7	0

12	5	4	10	1	8	13	10	6	7
9	4	0	7	1	4	5	8	3	2
3	1	4	3	0	4	8	2	3	5
11	9	10	17	10	5	11	13	17	4
6	0	3	9	2	5	7	4	8	4
5	9	7	8	8	0	4	9	9	0
9	5	15	11	12	10	5	8	7	9
7	2	8	4	5	1	3	0	6	2
2	3	7	7	7	9	2	8	1	7
0	8	12	5	14	11	15	7	8	4
0	2	7	1	6	5	9	4	8	2
0	6	5	4	8	6	6	3	0	2
10	11	8	9	8	7	14	4	10	3
4	9	1	3	7	0	8	1	5	1
6	2	7	6	1	7	6	3	5	2
13	7	4	6	16	6	12	6	16	3
8	7	3	4	9	0	6	2	7	3
5	0	1	2	7	6	6	4	9	0

Multiplication Facts to Be Mastered

0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1
1	2	3	4	5	6	7	8	9	1
0	0	0	0	0	0	0	0	0	1

2	3	4	5	6	7	8	9	1	1
$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{2}{2}$	$\frac{3}{3}$
1	1	1	1	1	1	2	3	4	5
$\frac{4}{4}$	$\frac{5}{5}$	$\frac{6}{6}$	$\frac{7}{7}$	$\frac{8}{8}$	$\frac{9}{9}$	$\frac{2}{4}$	$\frac{2}{6}$	$\frac{2}{8}$	$\frac{2}{10}$
6	7	8	9	2	2	2	2	2	2
$\frac{2}{12}$	$\frac{2}{14}$	$\frac{2}{16}$	$\frac{2}{18}$	$\frac{3}{6}$	$\frac{4}{8}$	$\frac{5}{10}$	$\frac{6}{12}$	$\frac{7}{14}$	$\frac{8}{16}$
2	3	4	5	6	7	8	9	3	3
$\frac{9}{18}$	$\frac{3}{9}$	$\frac{3}{12}$	$\frac{3}{15}$	$\frac{3}{18}$	$\frac{3}{21}$	$\frac{3}{24}$	$\frac{3}{27}$	$\frac{4}{12}$	$\frac{5}{15}$
3	3	3	3	4	5	6	7	8	9
$\frac{6}{18}$	$\frac{7}{21}$	$\frac{8}{24}$	$\frac{9}{27}$	$\frac{4}{16}$	$\frac{4}{20}$	$\frac{4}{24}$	$\frac{4}{28}$	$\frac{4}{32}$	$\frac{4}{36}$
4	4	4	4	4	5	6	7	8	9
$\frac{5}{20}$	$\frac{6}{24}$	$\frac{7}{28}$	$\frac{8}{32}$	$\frac{9}{36}$	$\frac{5}{25}$	$\frac{5}{30}$	$\frac{5}{35}$	$\frac{5}{40}$	$\frac{5}{45}$
5	5	5	5	6	7	8	9	6	6
$\frac{6}{30}$	$\frac{7}{35}$	$\frac{8}{40}$	$\frac{9}{45}$	$\frac{6}{36}$	$\frac{6}{42}$	$\frac{6}{48}$	$\frac{6}{54}$	$\frac{7}{42}$	$\frac{8}{48}$
6	7	8	9	7	7	8	9	8	9
$\frac{9}{54}$	$\frac{7}{49}$	$\frac{7}{56}$	$\frac{7}{63}$	$\frac{8}{56}$	$\frac{9}{63}$	$\frac{8}{64}$	$\frac{8}{72}$	$\frac{9}{72}$	$\frac{9}{81}$

Division Facts to Be Mastered

0	0	0	0	0	0	0	0	0
1)0	2)0	3)0	4)0	5)0	6)0	7)0	8)0	9)0
1	2	3	4	5	6	7	8	9
1)1	1)2	1)3	1)4	1)5	1)6	1)7	1)8	1)9
1	1	1	1	1	1	1	1	2
2)2	3)3	4)4	5)5	6)6	7)7	8)8	9)9	2)4
3	4	5	6	7	8	9	2	2
2)6	2)8	2)10	2)12	2)14	2)16	2)18	3)6	4)8
2	2	2	2	2	3	4	5	6
5)10	6)12	7)14	8)16	9)18	3)9	3)12	3)15	3)18
7	8	9	3	3	3	3	3	3
3)21	3)24	3)27	4)12	5)15	6)18	7)21	8)24	9)27
4	5	6	7	8	9	4	4	4
4)16	4)20	4)24	4)28	4)32	4)36	5)20	6)24	7)28
4	4	5	6	7	8	9	5	5
8)32	9)36	5)25	5)30	5)35	5)40	5)45	6)30	7)35
5	5	6	7	8	9	6	6	6
8)40	9)45	6)36	6)42	6)48	6)54	7)42	8)48	9)54
7	8	9	7	7	8	9	8	9
7)49	7)56	7)63	8)56	9)63	8)64	8)72	9)72	9)81

Roman Numerals

I = 1	IV = 4	X = 10	XX = 20	XXX = 30
II = 2	V = 5	XV = 15	XXV = 25	XXXV = 35
III = 3	VI = 6	XVI = 16	XXVI = 26	XXXVI = 36

RECORD ON IMPROVEMENT TESTS

Make a copy of this table.

After you take each Improvement Test, write your test score in the table.

See how many times you can make the hard-workers' group.

RECORD ON IMPROVEMENT TESTS

Pupil's Name_____

Name of School_____

Grade_____

Test Score	0	1	2	3	4	5	6	7	8	9	10
								HARD-WORKERS' GROUP			
Test No. 1											
2									✓		
3											
4											
5											
6											
7											
8											

After each test number, put a check mark under your score.

If you make 8 on Test 1, put ✓ under 8.

Answer Sheet

1. Take a sheet of paper and place the top edge of it just under a row of examples.
2. Write the answers under the examples on the sheet of paper.
3. Fold your paper back so the first set of answers will not show.
4. Place the folded edge of the paper under the second row of examples.
5. Write the answers to the second row of examples, and so on.
6. Your sheet of paper should be folded like this:

Top of paper

Fold under here

Fold under here

Fold under here

Fold under here

The Members of the Hard-Workers' Group

"This year I was a member of the hard-workers' group on each of the eight Improvement Tests," said Jane.

"That is a very good record," said Miss Martin. "What was your average on all of the tests, Jane?"

"I did not find my average," replied Jane.

"Who can tell us how to find the average?" asked Miss Martin.

"Add the scores on the eight tests and divide by 8," said John. "I made scores of 6, 7, 7, 8, 8, 9, 9 and 10 on the eight tests. The sum of my scores is 64. This sum divided by 8 is 8. My average is 8, so I made the hard-workers' group for the year."

"Good for you, John, you made a big improvement in your work in arithmetic this year," said Miss Martin. "I want each one of you to figure your average, just as John did. If the average of your test scores is 7 or higher, then you are a member of the hard-workers' group for the year."

When the honor roll was published in the school paper, it included the names of all the fourth-grade pupils who had made the hard-workers' group in arithmetic for the year.

This is the way they smile when they make the hard-workers' group.

Liquid Measure

2 cups	=	1 pint
2 pints	=	1 quart
4 quarts	=	1 gallon

Dry Measure

2 pints	=	1 quart
8 quarts	=	1 peck
4 pecks	=	1 bushel

Clock Time

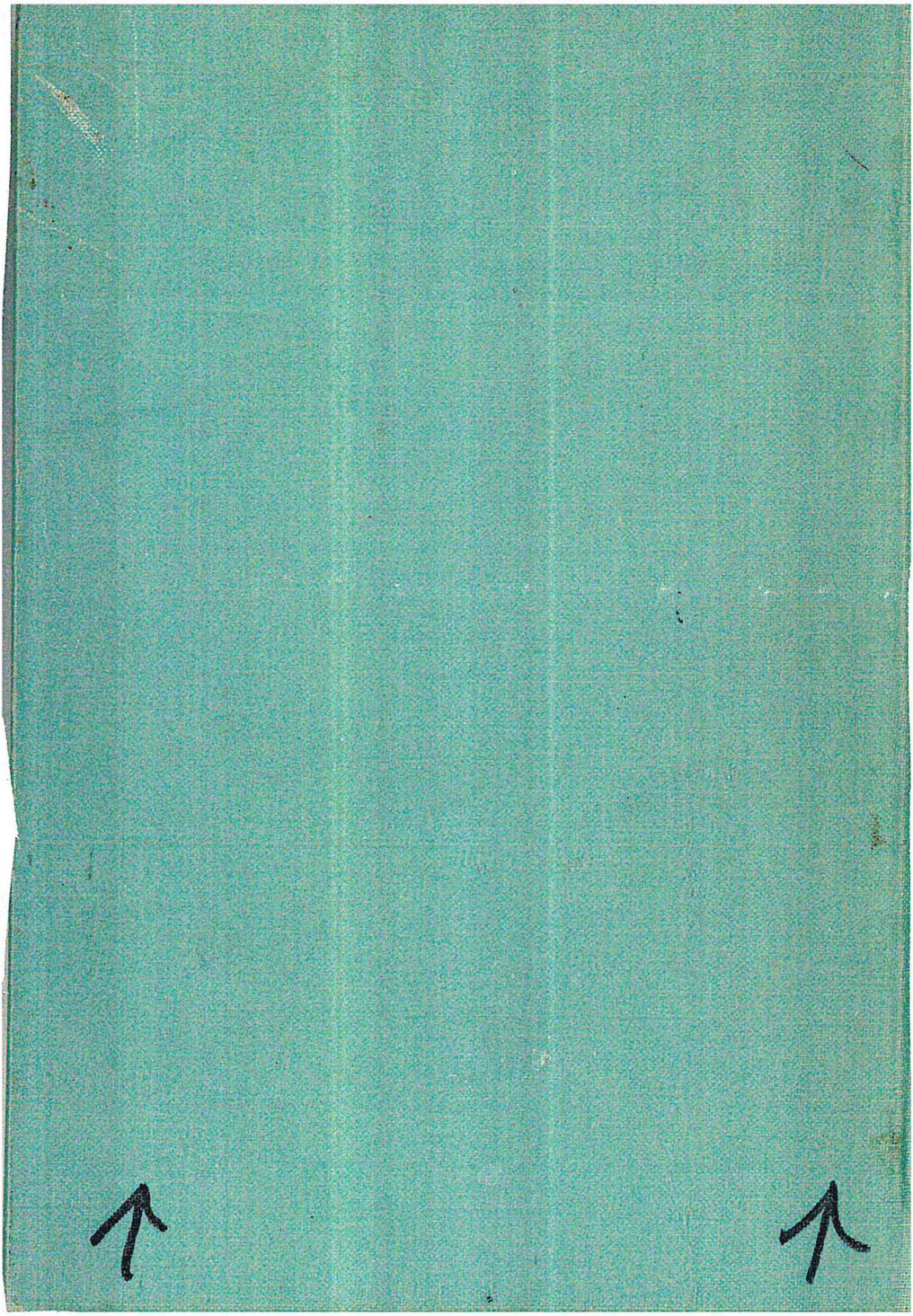
60 minutes	=	1 hour
24 hours	=	1 day

Calendar Time

7 days	=	1 week
365 days	=	1 year
52 weeks	=	1 year
12 months	=	1 year

Linear Measure

12 inches	=	1 foot
3 feet	=	1 yard
36 inches	=	1 yard
5,280 feet	=	1 mile
1,760 yards	=	1 mile

Measures of Weight

16 ounces	=	1 pound
2,000 pounds	=	1 ton